GeoComm

# Salt Lake Metro 9-1-1 Assessment and Feasibility Study

## Final Feasibility Assessment Report

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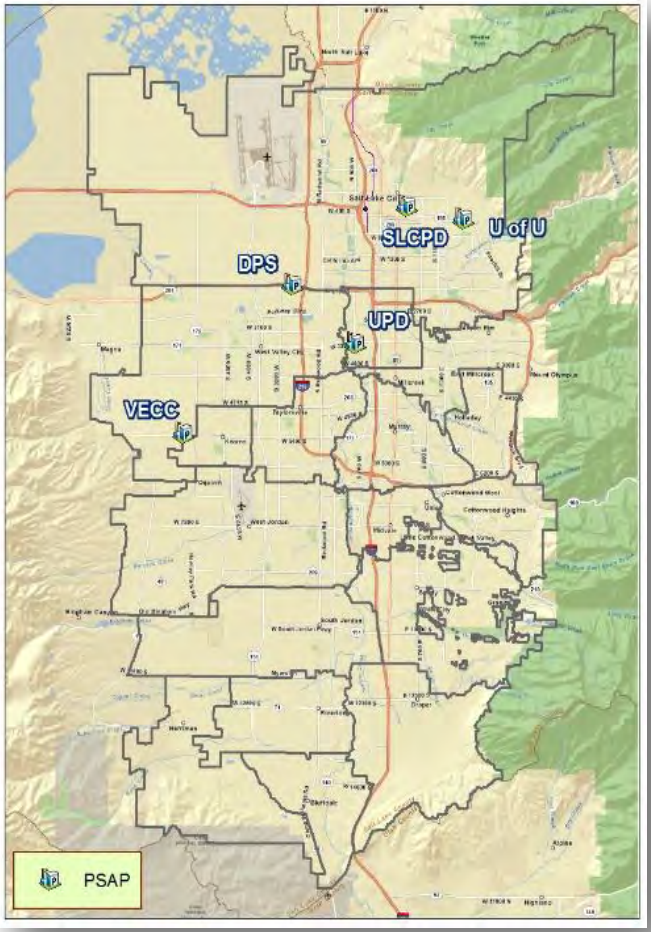
# 1 Executive Summary

## Overview

In fall 2011, GeoComm began a partnership with the Utah 9-1-1 Committee, the Salt Lake Metro Project Manager, and the Salt Lake Metro Public Safety Answering Point (PSAPs). The goal of the project is to provide these partners a comprehensive review of existing PSAP operations and provide recommendations to improving public safety services.

The five study PSAPs include:

- Department of Public Safety Salt Lake Communications Center Secondary PSAP
- Salt Lake City Police Department Primary PSAP
- Unified Police Department (UPD) of Greater Salt Lake Secondary PSAP
- Salt Lake Valley Emergency Communications Center (VECC) Primary PSAP
- University of Utah Department of Public Safety Secondary PSAP




### Methodology

Guiding principles are the precepts that guide an organization irrespective of changes in short-term goals, strategies, work, or top management. They are the fundamental norms, rules, or values that represent the desired state and help in determining the rightfulness or wrongfulness of the organization's actions.

Principles are more basic than policy and objectives and are meant to govern both. During interviews, discussions, and stakeholder forums, GeoComm conducted as a part of this 9-1-1 Assessment and Feasibility Study. The study participants articulated a set of guiding principles which define the desired service level for the citizens of the Salt Lake Metro region.

It is consensus among the public safety agencies in Salt Lake County that the Salt Lake Metro region public is best served:

- By a PSAP model that results in the least amount of time between call receipt and dispatch readiness
- When the cost to tax payers is equitable and fair
- When the 9-1-1 service is sustainable
- When there is a high level of PSAP personnel competency
- When the 9-1-1 service and operations have a high degree of survivability
- When appropriate protocols and technology are in place to ensure the most effective dispatch response regardless of situation or location
- Has a governance model that ensures the citizen expected standard of care is implemented
- When there is stakeholder involvement in decision-making to ensure citizen expected standard of care is attained
- When there is effective public safety communications management in place to ensure faithfulness to the principles held by the community

Once guiding principles were established by the stakeholder PSAPs, the questions of how to best achieve the principles followed naturally:

- If the principle is the desired state, how can the organization(s) best achieve the state?
- What needs to occur in order for the environment to be supportive of the desired principle?

As GeoComm conducted analysis and assessment of the current environment, that environment was evaluated against the principles as were various options or models that were developed for possible consideration.

Once the GeoComm team began looking at potential feasible models for implementation in the Salt Lake Metro region, it was important to measure those models against the identified principles. In all cases, the service to the public was foremost in our assessment. By using guiding principles that seek improved public service, an independent evaluation was possible. The GeoComm team reviewed six potential models for implementation and of those models; the team believes that the Assessment of the Current Structure through Improvements Model and an Optimum Service Model emerged as most closely aligning with the principles.

# Assessment of Current Structure

One of the evaluation processes GeoComm undertook was to consider what improvements could be made in the region under the current structure and environment. If nothing changed in the number or configuration of PSAPs, what improvements might be possible? The status quo model, by definition makes no changes to the current configuration of PSAPs in the region. GeoComm found that the historical experience in this region has demonstrated that despite efforts to resolve the political, operational, and financial issues that exist within the current configuration and infrastructure, the region has not achieved maximum success nor alignment with the guiding service oriented Principles. Therefore, this report contains a significant list of possible improvements, and GeoComm recommends changes to the governance structures, financial resource distribution, and operational processes to more effectively and efficiently provide public safety services to the citizens while keeping relationships between the area PSAPs as they are currently. Some of these recommended improvements include:

- Establishment of Joint Regional Working Committees and multi-agency task force
- Strategic planning
- Standards development
- Reduce or eliminate transfers or delays in call processing
- Investigate the root cause of high numbers of abandoned calls
- Enhancing PSAP survivability by protecting mission critical systems
- Ensuring compliance with state and federal training mandates and national training standards
- Conducting data cleanup and review of data maintenance procedures

Within the current PSAP configuration some significant changes and enhancements in existing governance structures are highly recommended. This action is important and necessary to resolve the current conflicts that exist regarding past policy decisions and the perceived disparity with distribution of surcharge funding and general revenue support.

One of the predominant advantages that might be perceived by maintaining the status quo is that no change usually means that the problems and issues are well known and understood and to some degree have been managed at least at a low level. Optimal operations and efficiencies may not be realized, but the business of 9-1-1 is accommodated.

There is often capacity within organizations to operate with some degree of functionality despite the issues that the people of the organization deal with day in and day out. While GeoComm's primary recommendation is Optimum Service Model, Section Six, we realize there are benefits to be realized in the interim within the current structure. However, without change to the existing conditions, little improvement to service, efficiencies or effectiveness will be realized and the principles adopted by the region will not be achieved. It is GeoComm's position that the Salt Lake Metro region would not be satisfied with such an outcome.

Without implementation of any of the GeoComm recommendations within the current model, the region would find that the list of issues that would continue is extensive. While the recommended improvements are moderately helpful in advancing the service level in the region, when GeoComm evaluated the potential improvements against the principles it was necessary to consider a more profound impact to truly be faithful to the region's stated principals of quality service.

## Recommended Model

The recommended model for the Salt Lake Metro area is a configuration where a new primary PSAP incorporating the jurisdictions of the entire county, with the exception of Salt Lake City is formed under a new governance structure. This recommended model provides for the current VECC operation and UPD operation to form a new, single entity. For ease of reference GeoComm has named this new structure the Unified Emergency Communications Agency (UECA).

However, what the agency is called at this stage is not important. Ultimately, if the region pursues the recommended model, the name should encompass the spirit of the region and the new agency. GeoComm has attempted to use the term embraced by the region and one that represents the unified and integrated nature of the new center. The Transition Team should recommend and the Policy Board should determine the appropriate name for the new agency. UECA is only used here for ease of reference.

Within the recommended model, the primary PSAP at Salt Lake City remains as currently planned – a combined police and fire/Emergency Medical Services (EMS) operation serving the city limits of Salt Lake City.

The specific mission, service area and population of the other two secondary PSAPs, Utah Highway Patrol's Department of Public Safety Salt Lake Communications Center Secondary PSAP and University of Utah Department of Public Safety PSAP, justify remaining a secondary PSAP and a continued separation of responsibility by distinct PSAP services. GeoComm made this justification based on several specific aspects of the secondary operations. The University of Utah Department of Public Safety serves a population of 31,000 students and 15,000 faculty and staff with unique campus security needs and specific security issues common to a large campus population. The University property includes several large research laboratories and the University of Utah health care system and facilities. The Department of Public Safety at the University is involved in the traditional campus patrol, specialized after hours escort functions, building monitoring functions, campus-related issue investigations, sports activity patrol, and peacekeeping. This campus-specific response contributes to the unique requirements of the University of Utah Department of Public Safety PSAP.

Department of Public Safety Salt Lake Communications Center is a secondary PSAP and also serves a unique population within Salt Lake and Utah counties. In 2010, 99 percent of 9-1-1 calls received by the center were from a wireless device reporting incidents on the Utah highway system. Wireless call routing, by its nature, is not specific and cannot be precisely managed like wireline routing can; an entire cell sector of a tower must be routed to only one PSAP. In order to direct wireless calls that are destined for the Department of Public Safety Salt Lake Communications Center, because they cover the portion of the highway within the agency's response area, an entire cell sector's wireless footprint would have to be routed to the Department of Public Safety Salt Lake Communications Center. This could involve the Department of Public Safety Salt Lake Communications Center transferring back to other primary PSAPs the calls not within the Department of Public Safety Salt Lake Communications Center jurisdiction, such as in the case of a wireless call from a home or business adjacent to the highway and within the footprint of the cell sector, reporting a fire or a theft. The confusion and unnecessary transfers required under this potential scenario would be potentially significant and are not recommended. In addition, the Department of Public Safety Salt Lake Communications Center provides dispatch services for 20 state agencies and divisions. They also must coordinate with the Salt Lake Metro region's public safety agencies—VECC, UPD, and Salt Lake City Police and Fire/EMS Departments if additional resources are required on an incident within the jurisdiction on the highway system such as a car fire or an accident with injuries. This coordination will continue in the Optimum Service Model although the complexity of that coordination would be reduced as only two other agencies would exist.

This model allows the communities in the region, outside of the City of Salt Lake, to be served by a single agency, where police, fire, and EMS dispatch services will be unified.

It is GeoComm's finding that strategic and significant changes to the structure and governance in the region is the best approach to resolving the longstanding service issues and provide the level of service the residents of Salt Lake County require.

The recommended governance structure in this Optimum Service Model is one where a separate representative authority would be established as a UECA Policy Board. Salt Lake County and all municipalities, with the exception of the Salt Lake City jurisdiction, would assign or appoint appropriate representatives to a governing board responsible for policy and funding decisions. The chief law enforcement position in the county, the Salt Lake County Sheriff, should be the position of leadership as the designated chair of the UECA Policy Board. The rationale for recommending that the Sheriff be the chair of the Policy Board is two-fold.

One, the position is an elected position which supports the recommendation that all members appointed to the governing board be elected officials and responsible and accountable directly to the electorate and taxpayer. The second reason for this recommendation is that as the chief law enforcement official in the

county and one familiar with the needs of both the community and emergency services, the Sheriff is in the unique position of having a perspective on what is needed to oversee and manage an emergency services operation as well as the needs of responder.

GeoComm recommends that all members appointed to the governing board be elected officials. Policy Board level individuals should be elected officials whose responsibilities are directly linked to the electorate and taxpayer.


## Recommended Model Alignment with the Principles

The principles, as developed and articulated by the PSAPs in the Metro region, focus on the needs of the community and are about quality service for citizens of the region. They are not about, and should not be about, an individual PSAP, government, or person. Decision-making in a service-oriented environment is committed to directing the organization to the most effective and efficient operations.

When you remove the emotion that often surrounds the decision-making process, what remains is faithfulness to the principles. The end result is an effective strategic direction. It is this goal that

GeoComm pursued when determining appropriate structures for improved emergency communications for the region.

GeoComm understands that the finding and recommendations contained in this report may not please each of the participants in the study. It is anticipated that some stakeholders may believe the recommendations are less than desirable from an individual or personal perspective. However, the greater good of improved service to the public at large was the charge of the Utah 9-1-1 Committee to GeoComm, and we believe that to be true to that mission, it was necessary for an unbiased approach to solutions for the region.

By using guiding principles that seek improved public service, an independent evaluation was possible, and an Optimum Service Model developed that incorporates the region's principles to the highest degree possible.

## Financial Recommendations

Public funding for government services requires careful attention to both the accounting and the decisions related to appropriate service levels to ensure public trust and fulfill the essential function of responsible government. Several of the guiding principles speak directly to this goal by seeking costs models that are both fair and equitable and provide funding mechanisms for sustainable systems to meet the standard of care expected and demanded in the region.

While there are a number of recommendations for action if the region continues the current structure, the majority of the recommendations should have little cost impact to the PSAPs. Remaining in the current model with the implemented recommendations is simply approaching the issues as a region rather than each PSAP individually and should not have a major cost impact. Even with the minimal cost impact, GeoComm does not view this option as the recommended model.

GeoComm's assessment of the revenue and expense requirements of the new UECA organization reveal that eventual costs savings can potentially be achieved and maintained over the long-term. The duplication of technology, facility, and staff that exists today with a primary and secondary PSAP are considerable. Reducing this duplication, saving taxpayer dollars, while improving service, and ensuring that the public's standard of care expectations are key components to meet the principles and is recommended. Staffing duplication alone could save significant dollars over the long term. While actual savings can only be projected as part of the transition planning process as local operational decisions are made, it is safe to assume significant reductions in duplicative costs equal real savings. Meeting the guiding principles of fair and equitable cost to the taxpayer is also realized by adopting this model.

The anticipated budget for the UECA organization is considerably reduced not only in the first year of operation, but it remains lower than the combined current operations for the five years of projected costs. This is primarily due to the elimination of staffing overlaps, equipment, facilities, and operational/ administrative cost.

The cost-shared coordination fee or assessment fee provided in the GeoComm recommendation is based on the percentage of population served and the project Optimum Service Model budget for the first year of operation.

Until the Optimum Service Model is adopted, transition planning completed, and a more sophisticated cost-sharing forecast can be jointly developed by the stakeholders, the projected assessment allocation presented within the financial section should be utilized for initial planning purposes.

In addition, since the communities in the region, other than Salt Lake City, would be served by a single agency, the police and fire/EMS dispatch services were not separated or broken out. Future costs for the Salt Lake City PSAP operation are not included as those costs are not impacted by this recommendation.

In the Optimum Service Model, the communities will pay a single assessment to the new Unified Emergency Communications Agency incorporating the 9-1-1 surcharge fees from the community and the traditional service assessment or overhead allocation. The combination of these funds should constitute the total funding from the community.

However, GeoComm cautions that cost alone must not be the driving factor of pursuing this optimum model. Local decisions will need to be made during the transition phase that will affect costs and budgets; GeoComm believes the overarching reason to pursue this model is that it most fully meets the guiding Principles.

## State Direction and Oversight

In addition to the specific local and regional recommendations in this report, GeoComm also makes two significant recommendations for the Utah 9-1-1 Committee's consideration. One recommendation is the development of a long range strategic plan, and the other recommendation is for the Utah 9-1-1 Committee to adopt 9-1-1 service standards.

The Utah legislature created the Utah 9-1-1 Committee and has directed the Utah 9-1-1 Committee to provide recommendations on technical, operational, and financial issues related to statewide wireless Enhanced 9-1-1 (E9-1-1) issues. The Utah 9-1-1 Committee is charged with making recommendations to

the Bureau of Communications, PSAPS, and the Legislature on the technical and operational issues surrounding the implementation of a unified statewide wireless and land-based E-9-1-1 system.

Strategic planning is the process of defining its strategy, or direction, and making decisions related to allocating its resources to pursue this strategy. In order to determine the direction of the Committee, it is necessary to understand its current position and the possible avenues through which it can pursue a particular course of action. A strategic planning process should end with objectives and a roadmap of ways to achieve them. The goal of strategic planning is to increase clarity in the mission and a defined method to achieve that mission.

It is GeoComm's position that this strategic planning initiative should be facilitated by a professional, independent party to assist the Utah 9-1-1 Committee to focus on the outcome of the plan. Because the Utah 9-1-1 Committee is representative of the state's public safety and 9-1-1 communications stakeholders, it is the appropriate vehicle for conducting a strategic plan related to 9-1-1 services provided throughout the state. Every effort should be made to ensure that the process is collaborative and addresses needs of the local public safety agencies, the Utah 9-1-1 Committee, and the public expectations for 9-1-1 service. Regional representatives should be required to include all members of their region in the process and as part of the position development by the region as a function of the strategic planning process. The strategic plan should focus on the development of a statewide roadmap that clarifies the roles and responsibilities of local agencies, the Utah 9-1-1 Committee, and adopts principles and guidelines for a "statewide unified wireless and land-based E9-1-1 emergency system."

In addition to the critical need for strategic planning, GeoComm further recommends that the Utah 9-1-1 Committee adopt standards related to their assigned mission and statewide 9-1-1 services. The Utah Code specifies that the 9-1-1 Committee is responsible for "specific technology and standards for the implementation of a unified statewide wireless and land-based E9-1-1 emergency system."

Standards, when properly established and implemented, help to ensure consistent service levels, reduce costs and risks, and improve efficiency. To be highly effective, 9-1-1 and PSAPs benefit from standards and guidelines as does any critical public service. Development of standards will require an inclusive and collaborative effort among all the state 9-1-1 stakeholders as members of the Utah 9-1-1 Committee in order to ensure a comprehensive and acceptable process.

The Salt Lake Metro region and the state would benefit from standards, established by the Utah 9-1-1 Committee, with regard to minimum criteria to be a PSAP, minimum training, minimum staffing, technology, GIS maintenance and synchronization, the format, and use of the ECaTS data, etc. In addition, there should be minimum network infrastructure requirements especially with a view to the transition to Next Generation 9-1-1 (NG9-1-1). It may even be appropriate for the Utah 9-1-1 Committee to adopt

operational guidelines for the committee itself that require regional representatives to consult with the other PSAPs in their region on issues that come before the Utah 9-1-1 Committee for action.

GeoComm recommends the Utah 9-1-1 Committee establish appropriate minimum standards promoting both the guiding service principles and the necessary guidelines for a "statewide unified wireless and land-based E9-1-1 emergency system" as is its stated mission.

## Summary

GeoComm is most appreciative of the cooperation we received from the Salt Lake Metro PSAPs. The staff was willing to meet with us and discuss opportunities for improving 9-1-1 service in the region. GeoComm would also like to acknowledge that each of the PSAPs in the region believes in what they do and all strive to provide the best possible service to the public within the economic and administrative constraints that exist. The challenges that the region will face when embarking on and implementing area wide improvements or a reorganization of the magnitude proposed may, at first, appear daunting. Some of the challenges will be easier to overcome and address than others. Mitigating or resolving the challenges, however, will continue to advance the region toward the ultimate goal of improved service, more effective governance, and policy development and a superior level of survivability and efficacy in operations.

One of the biggest challenges will be confronting and resolving the current of lack of collaboration among the PSAPs. It is not beyond achievable through leadership, conviction to improve service and resolve to more effective manage the Metro area 9-1-1 services for the citizens. It is likely that a respected leader will have to emerge who can unify the policy level stakeholders and energize the stakeholders to deal with this long-standing roadblock to effectiveness.

Highly functioning organizations are perpetually striving to increase efficiencies and find more effective ways of conducting their work. Successful organizations seek service enhancements to their constituency and put that goal above many others, if not paramount, in their processes and procedures. These successful organizations seek opportunities to improve and enhance operations at every level of the organization and within every task. In the spirit of seeking the same outcomes for the PSAPs in the Salt Lake Metro region, GeoComm believes that the potential enhancement to 9-1-1 service in the area recommended in this report are possible.

GeoComm encourages the Salt Lake Metro region to adopt the Optimum Service Model recommendation. While enhancements under the current structure are possible and will clearly improve service, they only go part way toward realization of the guiding principles articulated as the ultimate goal for the region. The Optimum Service Model, if adopted with a spirit of collaboration and resolve, will be most faithful to the principles and effectively enhance 9-1-1 service in the Salt Lake Metro region.

# 2 Findings

## Overview

As part of this Feasibility Study, GeoComm has conducted research, collected data (Appendix A, Data Collection Tool) from the five Salt Lake Metro area Public Safety Answering Points (PSAPs) and other appropriate sources, interviewed stakeholders, and observed PSAP operations. The various methods of data collection and observation have helped GeoComm identify a number of findings related to 9-1-1 service in the region. These findings are defined below and are the basis for the GeoComm recommendations to follow.

### Unnecessarily Complex Governance Structures

GeoComm understands that the governance structure of any organization is one of the most crucial elements to its success. The selection of an appropriate structure is especially important to a multi-jurisdictional public safety communications operation. When multiple agencies jointly operate a public safety communications center, participants must have confidence that their interests are represented in decision-making and that they can appropriately influence the level of service provided to their constituents. Either through direct or collaborative representation, agencies must have a forum for active participation in the policy development for and management of dispatch services.

Within the Salt Lake Metro region, several communities have decided to have police dispatching services provided by the Unified Police Department (UPD) of Greater Salt Lake PSAP while fire dispatch and 9-1-1 call taking services are provided by Salt Lake Valley Emergency Communications Center (VECC). Because of this policy decision, representatives from the same community may have a seat on the dispatch policy board of both UPD and VECC. The dual alignment with the two dispatching organizations causes a potential for a conflict of interest for those agencies. The scenario makes it difficult for municipalities that have representation on both boards to be completely objective when they consider policy and financial decisions that impact their communities.

GeoComm finds:

- The VECC Board of Trustees uses a weighted voting process for decision-making, and it was reported that as few as three municipalities can represent the majority. It is important to note that the VECC Operations Board representatives indicate all agencies have equal voting status.
- Both VECC and UPD report that their technology, especially the Computer Aided Dispatch (CAD) system is more versatile than the other and that if the other would convert, the call processing for dispatch would be more efficient. It is important to note that there is an interface between the CAD systems. The CAD issue was also discussed as part of reason why the two organizations are not currently in the same facility.

- The primary PSAPs receive all of the 9-1-1 revenue from a community that subscribes to them regardless of what it costs to answer/process calls. Once all of the agency costs are subtracted from 9-1-1 revenue, the remainder is charged to the subscribers based on a call volume/dispatch formula. The exception is the 9-1-1 revenue from the unincorporated area of Salt Lake County which is sent to the UPD. The municipalities that are served by both should be involved in the development of the assessment formula.
- There is a lack of strategic alignment of VECC's governing documents and the actual practice. Current governance practices do not match the current governing documents at the PSAP. It was reported that there is an effort underway to align procedures with current practice. The Operations Board assumes many of the responsibilities vested in the Board of Trustees in the Interlocal Agreement creating VECC. There is opportunity for both boards to evaluate the current structure and practices and align them with the governing documents. There are opportunities to enhance leadership within the existing governing bodies of the three agencies with governing boards: VECC, UPD, and Salt Lake City Police Department.

## Revenue Distribution Perceived Inequitable

All 9-1-1 call taking outside the City of Salt Lake is handled by VECC and dependent on the origin of the call; the call may be transferred to a secondary PSAP or dispatched by VECC personnel. Due to the fact that some municipalities use both VECC and UPD for discipline-specific dispatching services, the distribution of 9-1-1 surcharge funds is perceived by some to be inequitable and unfair. The policy decisions for distribution of 9-1-1 funds have created an unhealthy political environment whereby agencies compete for funding through establishment of operational procedures.

A primary issue is that VECC Interlocal Agreement requires all members to assign all surcharge revenues to VECC. Communities that use UPD for dispatching services believe their surcharge funds should be distributed between the two organizations. UPD does receive surcharge funds from unincorporated Salt Lake County based on an agreed upon percentage. Recent changes to legislation which now permit the use of 9-1-1 surcharge funds for both 9-1-1 call taking and dispatch have raised concerns among some members of the PSAP community who would prefer the fund use be more defined and not subject to broad interpretation.

## Lack of Collaboration Among Agencies in the Region

GeoComm has found that the different agencies participating in call taking and dispatch services in the Salt Lake area operate independently with little inter-agency collaboration on policy and administrative levels. Because of the different governance and funding models for each of the five organizations studied, there is a distinct disconnect with regard to the perception of equity for funding and operations. There is no unifying mechanism to resolve issues that transcend a specific individual jurisdiction.

As discussed in the Existing Conditions Report, even though all of the board and executive management representatives interviewed had a positive opinion of the current level of service provided by their respective agencies, there are some specific issues that must be addressed and resolved in order to provide more efficient and effective service across the Salt Lake Metro region as a whole.

Specific issues include:

- Cities that use both VECC and UPD have representation on both governing boards may pay both agencies for emergency communication services received. This establishes potential policy decision-making conflicts.
- There are differences in opinion at both VECC and UPD as to agreements made 20 years ago regarding UPD moving dispatch operations to the VECC facility and these viewpoints continue to plague the two organizations' ability to work effectively together.
- The power of funding by agency affiliation with a particular PSAP is well known and understood by the parties. Agencies use that influence to create additional and specific service requirements and agency specific actions, that by their very existence, detract from the overall concept and numerous benefits of a truly consolidated call taking and dispatch operation and can create delays in call processing.

It is important to note that these longstanding issues were identified by all stakeholders, and representatives expressed an openness to consider different governing and funding models that would make both the level of service and the cost for service more equitable across the region.

## Region and State Lacks 9-1-1 Strategic Plan

GeoComm noted above that there is a lack of collaboration among the region's PSAPs so it is not surprising to find a lack of strategic planning either at the individual PSAP level or as a unified region. The lack of strategic planning, however, hampers the five Salt Lake area PSAPs from finding areas of synergy and collaboration which could enhance the operations of all the PSAPs and more closely meet the guiding principles. Instead, each PSAP jurisdiction is vying and competing for service territory, equipment, status, and funding. This competition adds another layer of divisiveness and can be a distraction from effective service delivery.

For strategic planning at the regional level to be fully effective, it should align with a statewide strategic plan. Currently, the Utah 9-1-1 Committee appears to review funding requests on a case-by-case basis, but a direct connection to Utah 9-1-1 Committee mission and long-term efforts is not always clear during the evaluation. A statewide strategic plan should clearly outline the goals of the Utah 9-1-1 Committee, strategies for implementing the goals, resources available to the Committee and the PSAPs, and a method of evaluating local priorities.

Specifically the plan should detail funding strategies that would allow the Utah 9-1-1 Committee to evaluate a funding request and determine if it is in the best strategic and economic interests of the PSAP and the state. The direction and goals at the state level would then be the basis for building a Salt Lake Metro regional plan.

## Utah 9-1-1 Committee Role and Responsibility Should be Enhanced

GeoComm finds that the Utah 9-1-1 Committee may find it helpful to review the scope of responsibility or the authority intended by the legislation that created the organization. It appears that the Committee often struggles with whether it is appropriate to take action on an item coming before the Committee or how much direction to provide to a PSAP or group of PSAPs in a region.

Utah statute identifies responsibilities of the Utah 9-1-1 Committee to include[1]:

- "Technical and operational issues for the implementation of a **unified** statewide wireless and land-based E9-1-1 emergency system"
- "Specific technology and **standards** for the implementation of a unified statewide wireless and land-based E9-1-1 emergency system"
- **"Expenditures by local PSAPs** to assure implementation of a unified statewide wireless and land-based E9-1-1 emergency system"
- "Administer funds as provided by statute"..... "assist local entities-at their request-to implement the **recommendations of the committee**"

Review of the legislation may show gaps in process or action assigned to the Committee and appropriately addressing those gaps will provide the committee a method of evaluating requests that are brought before them from the state's PSAPs against the goals for a statewide unified system.

The Utah 9-1-1 Committee has developed and published an informational report – Utah State 9-1-1 Plan. It documents the current 9-1-1 environment in Utah and is intended to provide vision and leadership to support local and state authorities in their 9-1-1 efforts. The Utah State 9-1-1 Plan document states that: "The emergence and growth of nontraditional communication devices is continuing at tremendous speed. The boundaries of these technologies do not correspond with political boundaries, emergency service zones, nor even with exchange carrier service boundaries. The State of Utah 911 Committee is best suited to provide statewide planning that transcends the numerous service area boundaries between telephone exchanges and governmental entities." GeoComm concurs that the Utah 9-1-1 Committee is in the best position to provide statewide direction and planning.

[1] Utah Code, Section 53-10-601, enacted March 23, 2004, paragraph 1. a, b, c, and 3.

In addition, the Utah Code outlines specific responsibilities for the Utah 9-1-1 Committee that provide, not only direction, but require action by the Utah 9-1-1 Committee. The Committee's duties and powers outlined in paragraph five states "The committee **shall** adopt rules in accordance with Title 63G, Chapter 3, Utah Administrative Rulemaking Act, to administer the restricted account created in Section 53-10-603 including rules that establish the criteria, standards, technology, and equipment that a local entity or state agency must adopt in order to qualify for grants from the restricted account."[2]

It is incumbent on the Utah 9-1-1 Committee as the responsible fiscal agent of the public's monies collected for 9-1-1 service, to develop criteria, rules and standards to ensure the effectiveness of a "unified statewide wireless and land-based E-911 emergency system."

## High Abandoned Call Rates

The definition of an acceptable or "normal" range of abandoned calls is difficult to determine, and there is not any nationally known best practice for determining an appropriate number of abandoned calls; the two primary PSAPs both experience a higher than average abandoned call rate. This is not due to any action on the part of the PSAP or network issue, and the observations noted here are not meant to be a criticism in any way of the PSAP or its operation. This is a factor of the calling public. Abandoned calls mean that 9-1-1 has been dialed and while the call is being transmitted in the system the caller hangs up, or "abandons" the call. Because the transmission of the call is already in the system, the call is presented to the primary PSAP but when the call is answered, the caller has abandoned the call. PSAP protocol requires that these abandoned calls be investigated which generally consists of the call taker initiating a call back to the number presented to the PSAP to ensure that there is not an issue requiring the dispatch of a public safety agency. There are occasions where a call has been abandoned when assistance was truly required.

In the Existing Conditions Report, GeoComm reported that ECaTS showed the area PSAPs' average for abandoned calls during the one month study period is 12. However, this average included secondary PSAPs whose calls would have originally been answered by either Salt Lake Police Department PSAP or VECC. For the same study period, these two PSAPs experienced an average of 29 abandoned calls per day (Salt Lake City Police Department with 41 and VECC with 18, totaled and averaged). This is a high number of abandoned calls which results in a drain on PSAP resources. For a population of 187,000 in the City of Salt Lake, GeoComm would expect to see an abandoned call rate of seven or eight per day. For the population and call volume handled by VECC, we also would expect to see approximately eight per day.[3] (Appendix B Project RETAINS).

[2] Utah Code 53-10-602
[3] APCO Project RETAINS: Follow Up Study Research Report, January 2009 George Mason University Center for Social Science Research

However, the fact that both primary PSAPs are higher than the national average by a significant number suggests there may be other underlying issues. During the on-site interviews, both Directors of the primary PSAPs shared with GeoComm concerns about the high number of abandoned calls and the excessive strain on staff time that is required to follow-up on these calls. The agencies expressed that they suspect that the abandoned calls are primarily wireless.

## Fragmented Dispatch Causes Delays

All fire and EMS services, including those services belonging to the Unified Fire Agency (UFA) are dispatched by VECC, the primary PSAP, while law enforcement dispatch in some of those cities is provided by a UPD, the secondary PSAP. Within the City of Salt Lake, all law enforcement service is dispatched by the Salt Lake City Police Department PSAP. 9-1-1 calls requiring fire and EMS services for calls originating within the City of Salt Lake are currently transferred to the Salt Lake City Fire Department for dispatch. The City of Salt Lake reports plans to combine their police and fire dispatch operation into a cohesive unit before they move to their new facility.

As part of this study, GeoComm observed PSAP staff conducting 9-1-1 call answering and call transfer activity at each of the primary and secondary PSAPs. GeoComm project team members found that calls were generally processed in accordance with common industry practices which include verification of event location, call back number, additional hazards, etc. While the staff at all PSAPs demonstrated a good understanding of their critical role in the overall effort to assist callers, calls for service which require transfer are delayed. It is inevitable that calls requiring transfer to another agency will take longer to process than calls that do not require transfer. However, GeoComm noted special call documentation processes at VECC, such as documenting the origin of calls for administrative purposes; this can result in the transfer time from "off hook" to caller delivery to UPD to be longer than the nationally acceptable parameters of call processing/transfer time. GeoComm acknowledges that changes to the VECC call handling Standard Operating Procedures (SOPs) related to this activity have reportedly been made recently.

## Despite Best Efforts to Mitigate, Disparate CAD Systems Add Complexity

In addition to the delays caused by 9-1-1 call transfer, Salt Lake City Police Department, VECC, and UPD utilize different CAD systems. This disparity can create complexity and potential delay in emergency call processing although some improvements have been made through the use of a technology interface between VECC and UPD. The technical interface allows electronic transfer of initial call data, and there is an ability of the original PSAP to electronically update an event once it is transferred under specific conditions.

After the electronic transfer of the initial call data, each change to the call record i.e., nature code, call status, narrative information, is automatically transferred to the other PSAP. It is GeoComm's understanding that after the initial electronic transfer of call data, any nature code changes are automatically transferred, but any other transfers of call data are manually transferred if desired and if the call is still in an "open" status at the other PSAP. If the other PSAP has already closed out of a call and additional details become known or additional services under the jurisdiction of the other PSAP are needed, a new call event is created and sent via the bridge for dispatch.

This in-progress call updating is essential to the dispatcher(s) and the responder(s). Accurate and current incident information is a safety and effectiveness factor for the responders and crucial to their ability for an effective response. For the VECC and UPD dispatchers, staying informed via caller and responder information as an incident changes is critical and keeps responders informed of the incident's current status The fact that this data exchange exists today adds complexity to the call processing technology and adds an additional point of failure.

The call processing times observed, particularly for calls being transferred from the primary PSAP to the secondary PSAP, did not always meet the national standard[4] for such call processing.

## Lengthy Call Processing Time

Call receipt and processing time is known as the interval between receipt of the emergency call at the PSAP to the moment where sufficient information is known to the dispatcher and applicable units are notified of the emergency. The maximum time for this component is specified in NFPA ®1221. Section 7.4.2 which states that 90 percent of emergency call processing shall be completed within 60 seconds, and 99 percent of call processing shall he completed within 90 seconds. While this is a fire services-based standard and technically applies only to fire and EMS calls that are transferred for dispatch, GeoComm believes these standards outline an effective practice and a reasonable measurement for all PSAP operations.

- It was reported and observed at VECC that the original call taker who determines that the inbound call is a medical emergency will send the call/caller to the fire/EMS call processing unit within VECC; the caller inquiry continues and on medical calls in which the chief complaint was not well defined, may use no more than two minutes to more precisely define the nature of the medical emergency being reported. If a chief complaint update has not been assigned to the call within the two minutes, the call is dispatched as a generic medical call. An instance in which the caller promptly describes the incident such as a cardiac arrest or other major classification, the two minutes clarification period is not used. Given the responsibility of the fire department to respond as

[4] NFPA®1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems 2010 Edition and additional references within ASTM F-1220 for EMS calls and NFPA 1710 for Fire Suppression Calls and EMS Calls

indicated within the standard, this practice has the potential to add significant time to the overall call processing dynamic and be contrary to the best interest of the patient.

## Insufficient Continuity of Operations and Survivability Planning

The survivability of operational integrity in order to sustain basic levels of service is a critical aspect of operational effectiveness. The range of service offerings available under adverse conditions may range from basic call taking and dispatch to the fully functional array of services offered under normal conditions at the PSAPs GeoComm recognizes the importance of being prepared with a series of backup plans designed to continue mission critical services in the unforeseen circumstance of a 9-1-1 system outage, facility or technology failures, or emergencies which cause an excessive spike in emergency call volume. The PSAPs within the Salt Lake Metro area have prepared broad plans to continue direct service to the public in the event of various hazard scenarios however:

- Until additional backup systems are in place, there is insufficient redundancy in the region for all classes of potential risk. Consequences have not been cooperatively defined nor have effective response and mitigating strategies been developed collaboratively among all PSAPs. GeoComm is unable to validate jointly developed emergency plans that define each potential scenario, each PSAP response, and the collective response when local efforts are not adequate.
- In addition to operational planning, GeoComm finds that the 9-1-1 Selective Router serving the Salt Lake Metro area lacks redundancy. Without an adequate backup, the region would not be able to continue 9-1-1 operations if a catastrophic outage occur impacting this equipment. The 9-1-1 network also has significant vulnerabilities with less than robust network diversity.
- The APCO NENA ANS 1.1.02-1-2010 PSAP Service Capability Rating Scale cites annual exercises as a requirement. The actual level of regular or planned training and exercises related to emergency procedures was unable to be provided. VECC does report participation in all hazard planning and exercises. In addition, as reported in the Existing Conditions report, all PSAPs report that they will be participating in the April 2012 "Great Utah ShakeOut" earthquake drill. Exercises such as these are excellent tools for increased collaboration and improved service.
- There are different levels of redundancy and diversity for mission critical radio communications. Some centers only have portable radios to be able to continue to operate while others have complete backup trunked radio systems. The variance in redundancy for mission critical communications means that some agencies will not be functional at an optimal level should a service outage occur.
- All of the PSAPs, with the exception of the University of Utah Campus Security, have redundant communications paths in the event of lost radio communications links between the PSAP and main transmitter location. Campus Police use the UCAN system, and do have backup control stations installed at each position. Campus Security uses a VHF system with no redundant communications path between dispatch and the VHF transmitter.
- All of the PSAPs are supported by a generator to provide power to critical communications equipment and to allow the continuation of dispatching emergency calls for service during power outages.

- Inconsistent attention to the proper and regular exercising of critical systems can lead to a PSAP not being available at the most significant time of need.[5] GeoComm found that exercising of the generator system is performed at different levels and intervals by the study PSAPs.
- Uninterruptible Power Supply (UPS) systems range from individual systems per console position to complete dispatch floor coverage.
- Inconsistent UPS battery maintenance programs exist. For some of the PSAPs in the region, GeoComm could not confirm that any type of scheduled battery maintenance was conducted. As with exercising of critical generator systems, UPS battery maintenance programs are essential to ensure continuity of operations when they are most needed. Agencies should ensure that UPS battery maintenance and diagnostics testing be performed in accordance with the latest Institute of Electrical and Electronics Engineers (IEEE ) 450, IEEE 1106, or IEEE 1188 standards for the appropriate battery type.

## Inadequate Facility Survivability

GeoComm completed a preliminary high level assessment of the five current PSAP facilities to identify the suitability to serve as an adequate alternate location for PSAP operations that might be displaced.

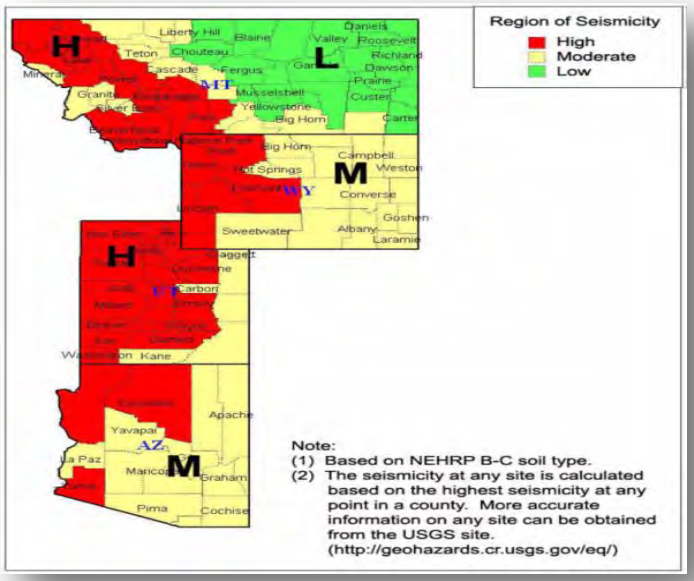
As reported, given the geography of region, the entire area has a risk and vulnerability related in part to the identified Wasatch Fault[6] and therefore, all the facilities have seismic risk. Consistent with the recognized vulnerability within the region to seismic activity, specific verification of current structural assessments was sought.

The two primary PSAPs today are dramatically different in design, layout, and overall suitability. The Salt Lake City Police Department PSAP is located within the public safety building. The current space is not adequate to accept a large surge of activity. GeoComm reviewed the publicly available plans for a new public safety facility within the City of Salt Lake. The proposed construction will be a substantial improvement over the current Salt Lake City Police Department PSAP facility with regard to facility stability and survivability. There are future plans to mitigate the vulnerabilities of the Salt Lake City Police Department PSAP upon completion of their new facility. Reportedly, VECC, DPS, and UPD dispatch buildings are built to the current local building code standard per interviews with PSAP staff. The City of Salt Lake facility currently under construction will be built to current local building code standards as well. It was reported to GeoComm that the VECC building was constructed in accordance with seismic risk factors in effect at the time.

[5] NFPA® 110 Standard for Emergency and Standby Power Systems 8.4
[6] Utah Seismic Safety Commission, 2008, Salt Lake City Utah

The building itself may be able to withstand significant shock and movement; emergency management planners should be aware that during a major event, access to the building, the requisite public safety communications infrastructure, and mission critical equipment also needs to be fully protected.

**Seismicity Regions in Arizona, Montana, Utah, and Wyoming**[7]




The University of Utah facility had a building study performed on their dispatch center by JRCA Architects in June of 2011 that stated "The building does not meet the structural and seismic design standard of an "essential facility" required for all Public Safety buildings."

While GeoComm is certain the Salt Lake Metro area fully understands the geographic risk within the region, collaborative planning, and cohesive preparation development is even more essential for an area with such high risk factors.

## Inefficient Use of Existing Facilities

GeoComm finds that the use of space in all five of the study PSAPs would benefit from some improvement considerations. The space is either used inefficiently, lacks functionality, or is inadequate.

- VECC has open space within its operations area to absorb additional workstations for both short- and long-term use as necessary. This open area, if configured properly could become the assigned space to add to the PSAP operation. In addition, with less formal configuration efforts, the same space could effectively become the primary alternate location for operations of the other Salt Lake

[7] Rapid Visual Screening of Buildings for Potential Seismic Hazards, A Handbook FEMA 154, Edition 2, March 2002

Metro area PSAPs in the event of a disaster that created a need to re-locate any of these direct service centers. In either case, the space has significant value to the public safety community, since the initial construction costs are resolved. However, there would be increased engineering, installation, furniture, and supporting technology costs in order to complete either of the missions cited above.

- Salt Lake City Police Department current PSAP location has limited space for expansion. However, the plans to merge the fire/EMS dispatch function within the existing PSAP will add more staff and required workspace immediately. The proposed new Salt Lake City PSAP facility appears to be more adequate for current service demands. There will be opportunity in the new facility to configure space that would allow for a number of positions to also serve as an alternate location for the other regional PSAPs should their buildings become uninhabitable for any reason. In addition, the vacated facility with already installed equipment and floor space might be an adequate location to retain as a backup facility. However, if Salt Lake City chooses to utilize this space as a backup, they need to be aware that since it is geographically close to the new building, a physically catastrophic event disrupting operations for the new facility would most likely render the backup facility uninhabitable as well.
- The Salt Lake County Emergency Operations Center (EOC) building is occupied by UPD dispatch, the county's EOC, and the UFA Administration Offices. There is additional space and unused workstations within the dispatch area. The use of such vacant space as a temporary alternate location has some potential for short-term interruptions of service and would have nearly immediate access to displaced staff. The UPD has workstations that could, with some modifications, be used by 9-1-1 center staff displaced by an event/condition at another PSAP.
- The PSAPs have internal plans and processes in place for providing services under adverse power outage conditions. The use of current space to meet the standard requirement of an alternate facility from which service similar or equal to normal operations, does exists. The full potential of this alternate space for backup or alternate operations has modification costs, but new construction is not necessary as PSAP backup plans on an individual PSAP basis are moderately appropriate and at least basic level support space and service is available.
- The observed reluctance or unwillingness to utilize open space at another PSAP, in the event another PSAP in the region becomes inoperable, is of concern.
- The Salt Lake City Police Department PSAP currently has a short-term backup facility with 12 positions. These positions are equipped with both telephones and computers. When utilized, radio dispatching would be done via base stations or handheld devices. In GeoComm's opinion, based on call volume and operational needs, such a re-location to this temporary facility may not be truly successful for more than a limited period of time. A long-term backup facility is required, since an event, if widespread, would potentially require relocation of PSAP operations over a significant time period.
- The University of Utah, Department of Public Safety PSAP is a unique concern since the current structure is without support and protection from the most severe risk identified in the region-seismic activity. The University has a partnership with Salt Lake City Police Department PSAP to retain the University calls in the event of a failure or issue with the University of Utah, Department of Public Safety PSAP.

## Inconsistent and Inadequate Training, Inconsistent Quality Assurance Programs

GeoComm finds that each of the PSAPs in this study have a self-described formal training program although there is great disparity between the programs, the trainer qualifications, and length of the programs. Some of the training programs are a cross between agency-specific training curriculum and commercially available general curriculum.

- All PSAP training programs reportedly meet the state requirement of attendance to the Bureau of Criminal Investigation (BCI) training and the Utah Peace Officer Standards and Training (POST) training course. No PSAP in the region; however, reports formal recognition of their training as compliant with industry standards such as APCO ANS 3.103.1-2010: Minimum Training Standards for Public Safety Telecommunicators, CALEA accreditation, or NFPA standards. No PSAP reports having completed a formal training needs analysis to base their agency training on which would validate the training program content, job description data, and performance evaluation plans.
- All PSAPs report that they use the National Academy of Emergency Dispatch (NAED) system. They report compliance with the NAED training requirements and NAED recertification training requirements.
- All but one PSAP reports a lack of training for PSAP trainers as classroom presenters and curriculum developers. All but two PSAPs report a lack of training for Communications Training Officers (CTOs) and one PSAP has CTOs trained through two different vendor training programs. Further, there are inconsistent minimum qualifications for trainers or CTOs between PSAPs. Such inconsistent training and qualifications for in-house trainers leads to the potential for improper training or negligent training which increases the PSAPs exposure to legal risks associated with mishandled emergency calls and negatively impacts the level of service to the public.
- All PSAPs report a formal Quality Assurance/Quality Improvement (QA/QI) program, but there are widespread inconsistencies as to how each program is designed, managed, and documented. Some focus on EMD calls only while others extends to the program to include all call types. Such inconsistencies in the type of emergency calls that are evaluated through the QA/QI process allows potential training and performance issues to go undocumented until such time as an emergency call is handled in a manner which is contrary to agency policies and protocols and results in further harm and a decreased level of service to the public.
- A wide range of training for new hires (end users) on the operations of their radio equipment or system operations exists. The majority of the PSAPs reported limited ongoing radio refresher classes for current public safety users or exercising of backup console radio systems on how to activate and use during console failures. Failure to train and exercise PSAP personnel on radio procedures in both normal and emergency operations directly impacts the effectiveness of PSAP personnel and increases the danger to public safety personnel who depend on radio communications as their lifeline.

## Inconsistent GIS Data

GeoComm finds that there are several different sources of data in the region, each with varying degree of accuracy leading to potentially inconsistent and unreliable data.

GIS data in the PSAPs today is viewed as a tool to assist the dispatchers. As the region moves into Next Generation 9-1-1 (NG9-1-1) accurate GIS data is imperative in delivery of calls to the correct PSAP.

Today, NENA encourages PSAPs to synchronize their data and to create strong maintenance programs at the local level.

- Only the datasets used by VECC and the University of Utah were developed with a focus on public safety/9-1-1. The University of Utah dataset is the most up-to-date and complete for 9-1-1 call locations. The University of Utah system is greatly enhanced by the work done on the Automatic Location Identification (ALI) database records whereby secondary addresses have been added that work within their mapping application and GIS data. For all of the datasets used by PSAPs in the region, synchronization testing should occur on a regular basis to ensure the MSAG, ALI and GIS data is being maintained together. Synchronization testing helps to determine what adjustments should be made in the MSAG or GIS data.
- While the GIS data requirements for fire and police have been taken into account in the selected data source for the new City of Salt Lake PSAP, this data should be reviewed to understand the level of synchronization between the MSAG and GIS with the dispatch mapping applications defined as the end-use.
- In the current state of GIS in the region, GeoComm finds the region is not fully ready for NG9-1-1. GIS will require a high degree of coordinated maintenance similar to MSAG maintenance levels today. As the region moves forward to NG9-1-1 the synchronization testing or geocoding processes should be two-fold. The geocoding process currently being done typically outlines the synchronization success for dispatch mapping as the end-use. Analysis processes should also be adopted to take into account the Emergency Call Routing Function and Location Validation Function (ECRF/LVF) NG9-1-1 processes. The geocoding process for NG9-1-1 should not take into account the use of adjustment processes such as address locators and should represent an exact match between location addresses and GIS data. The exact match process will ensure the highest success rate for GIS data in NG9-1-1.
- The Data Report Card results show that data cleanup should be completed. The proactive process will result in increased call location efficiency today and data preparation for NG9-1-1. If the region continues to utilize five different data sources the data cleanup costs will be multiplied. A combined maintenance program between PSAPs sharing a single GIS dataset can streamline maintenance procedures, minimize costs, and provide for a more accurate overall dataset. Establishing a cooperative maintenance process will set the stage for NG9-1-1.
- The region's MSAG data should be reviewed and adjusted to meet NENA standards. VECC and Salt Lake City Police Department have taken steps to cleanup the MSAG databases. GeoComm encourages a full MSAG audit coordinated with the GIS cleanup process. Issues reported in the Data Report Card analysis may be a result of errors or inconsistencies in the GIS, MSAG, or both.

## Agencies Lack of Ability to Upgrade Radio Software

The majority of the agencies report that the radio coverage in their respective areas was reported as very good to great including in-building coverage.

All of the centers reported being pleased with the level of support received from either their in-house technicians or contracted service providers. All of the centers have some form of redundant communications in case of a console failure.

- The dispatch consoles operating software has not been updated since 2005 and agencies wanting to upgrade their dispatch consoles cannot due to the connectivity to the Utah Communication Agency Networks (UCAN) radio network which will not support the newer technology.
- All agencies operating on the UCAN radio network have their alias table updated monthly. The delay of updating the alias table could endanger the safety of the first responder in emergency situations. Salt Lake City updates their alias table immediately when radio swaps occur.

## Radio Interoperability Training and Exercising

GeoComm finds that radio communications interoperability between all of the agencies on the UCAN system in the region is outstanding. There are common talk-groups that are programmed into all of the trunking radios that allow direct communications during planned and unplanned events.

Murray Police Department uses an 800 MHz conventional system that will not allow users on that system to communicate if they leave their coverage area. If other UCAN users respond to assist a Murray Police Department radio system user, it requires a console patch to allow direct communications. Since the surrounding agencies all utilize UCAN radio system, regional interoperability would be greatly enhanced if Murray Police Department would also operate on the UCAN system.

The region is commended for participation in major region wide drills such as the "Great Utah ShakeOut" earthquake drill noted above. Other than major events such as this, there is inconsistent training and exercised for interoperable communications in region. The lack of regular, collaborative and regionwide training and exercises creates a situation where users do not become familiar with the operational capabilities of their communications protocols, equipment or what other systems maybe available during emergency operations.

- Users frequently switch between their main agency's talk-groups and the other agencies' talk-groups thus allowing direct communications between first responders in the region to perform their daily duties in an efficient manner.
- Salt Lake City installed a Motorola OmniLink that allows their main talk-groups to be permanently patched into the UCAN system that allows UCAN users to have direct communications with Salt Lake City public safety users.
- UCAN's OPS and Event talk-groups are in every trunked radio. Thus allowing the users to have direct interoperable communications during daily and emergency operations. However, UCAN still is using the old naming scheme for the National Mutual Aid frequencies. This can lead to confusion in times of emergencies when agencies from outside of the region are responding to assist in operations.

## Radio Issues Reported at University

The University of Utah Department of Public Safety uses two radio communications systems. The University Police department utilizes the UCAN Motorola SmartZone 800 MHz trunking radio system for their operations. Campus Security uses a VHF simplex system for their operations. The VHF system consists of only one simplex frequency. This same VHF frequency also is used by the emergency phones or "e-phones" located around the campus for emergency calls by the students. It was reported that the UCAN radio coverage is acceptable overall; however, it has limited coverage in the hospital, Marriott library, and research park areas. System users report that the VHF has coverage issues at numerous locations around the campus.

When officers are in these weak coverage areas, they have to revert to using cell phones to contact dispatch, and the dispatchers are unable to reach them via the radio. This has the potential to put the officers at risk and could cause a delay in emergency response to the students and faculty calls for service. In addition, when an e-phone has a weak battery, it sends an alert to the dispatch center over the VHF Campus Security frequency. When this occurs, it causes issues when an officer is trying to reach the dispatcher.

## Assigned Responsibilities that Go Beyond 9-1-1 Call Response

Each of the five PSAPs has responsibility for answering non-emergency and/or administrative inbound telephone calls (complete list of ancillary duties reported by the participating PSAPs is in Appendix C). Other duties include after-hours administrative duties for various departments, staffing the public information window, processing warrants, alarm system monitoring, EOC camera monitoring, vehicle repossession tracking, and dispatch services for Jail Transport Law Enforcement. While these examples are not necessarily present at all of the five of the PSAPs GeoComm notes that it is common for entities to elect to send non-emergency/administrative calls to the PSAP or make the PSAP the point of completion additional duties because of the 24 hours per day and 365 days a year constant staffing.

GeoComm reviewed the duties provided at the PSAP in addition to 9-1-1 call taking and noted over 24 duties being performed at the participating PSAPs that are not directly related to the receiving and dispatching of 9-1-1 calls. If agencies decide to move to a new PSAP facility, these responsibilities become "leave-behind" duties. The duties must continue to be provided in most cases, but not necessarily by the new agency. It is reasonable to expect that some of the duties can be absorbed by the merged PSAP, but many must be addressed within the individual agencies and the transition and implementation planning process.

# 3 Guiding Principles

## Overview

GeoComm interviewed various stakeholders of the region's Public Safety Answering Points (PSAPs), reviewed the mission statements for each of the participating PSAPs, and conducted several on-site PSAP visits to discuss the goals and direction of the project. From this information and previously collected PSAP information, a set of guiding principles was developed which was used to evaluate the current environment and identify potential improvements for the Salt Lake Metro region.

The guiding principles are considered any principles or precepts that guide an organization throughout its life in all circumstances, irrespective of changes in its short-term goals, strategies, work, or top management. They are the fundamental norms, rules, or values that represent what is desirable and positive for a person, group, organization, or community, and help in determining the rightfulness or wrongfulness of its actions. Principles are more basic than policy and objectives and are meant to govern both.[1]

### Principles of Effective Service to the Public

It is consensus among the public safety agencies in Salt Lake County that the Salt Lake Metro region public is best served:

- By a PSAP model that results in the least amount of time between call receipt and dispatch readiness
- When the cost to tax payers is equitable and fair
- When the 9-1-1 service is sustainable
- When there is a high level of PSAP personnel competency
- When the 9-1-1 service and operations have a high degree of survivability
- When appropriate protocols and technology are in place to ensure the most effective dispatch response regardless of situation or location
- Has a governance model that ensures the citizen expected standard of care is implemented
- When there is stakeholder involvement in decision-making to ensure citizen expected standard of care is attained.
- When there is effective public safety communications management in place to ensure faithfulness to the principles held by the community

[1] http://www.businessdictionary.com/definition/principles.html#ixzz1mMljfmer

The principles are focused on the needs of the community at large and are about service to the citizens, not about the individual PSAP, government, or person. Decision-making in a service-oriented environment that is centered on the principles accepted by the organization or region, can only direct the organization to the most effective operations. When you remove the emotion that often surrounds decision-making, all that remains is faithfulness to the principle and the end result is an effective strategic direction. It was this goal that GeoComm pursued when determining appropriate structures for improved emergency communications for the region.

In addition, there are elements of the principles that must be taken into account in order to reach achievement. These elements are discussed within the following table:

| Principle Element | Description |
|---|---|
| Least amount of call processing time | This principle focuses on efficiency of operations and seeks to receive the call, obtain sufficient call details about the incident or issue from the caller, and commence response to the caller's reported situation in the most expeditious manner available. The prompt and efficient processing of a call usually means with the fewest potential points of failure or points of intervention by either technology or human processes. Often the most efficient method of processing call is the least costly but this may not always be the case. The key intent of the principle is improved service to the caller with an efficient and effective response to the emergency situation. |
| Fair and equitable costs | It is generally recognized that communities may, and do, make decisions in the best interest of their citizens that may complicate operations and response. However, it is also understood that these decisions are made in concert with the expectations of the standard of care desired by the citizenry. So, a decision by a jurisdiction to split dispatch services which has resulted in higher costs to that community because two agencies are involved and each handles and processes a portion of the call cannot be made without the express understanding that higher costs may be necessary in order to achieve the desired standard of care. The resulting higher cost has to be borne by the jurisdiction which has made the decision to introduce the more complex operational procedure in order to achieve the goal. |
| Sustainable service | One of the core services of government is providing for the health and safety of its citizens. The expectation of the public is that reliable public safety services will be available when the need is present. Funding these services to the level of public expectation is the responsibility of the governance the people elect to ensure those services. Sufficient funding to ensure the public's expectations are met can be a challenge in the best of times and is especially critical in times of economic stress. |

| Principle Element | Description |
|---|---|
| | It is essential that governments make sound decisions to not only ensure the sustainability of their public safety systems but that they do so with the greatest efficacy so as not to squander the public investment. |
| Competency | The level of competency at all levels in the organization defines the attention the organization pays to service quality. Recruitment and hiring practices, retention rates, standards of service and performance measurements, practices, and most especially training and supervision quality are all indicators of a competent staff and a competent organization. |
| Survivability | Public expectation for a reliable system of public safety services that is available when the need arises is a necessity, not a luxury. Ensuring the public safety system is survivable is an essential service. Survivability, as it relates to 9-1-1 operations is a measure of redundancy and resiliency in systems and facilities. Backup plans and facilities help to support the survivability of the 9-1-1 call center and their ability to continue providing service under less than optimal conditions or in alternate locations or under alternate methods of operation. Continuity Of Operations Planning (COOP) that is robust and had made provision for potential service interruption illustrates an organization's capabilities of preparedness in the event of a long-term degradation of service. The degree to which a jurisdiction is prepared to withstand more than a short or limited outage should be evaluated and considered. |
| Appropriate practices for effective dispatch | When appropriate protocols and technology are in place to ensure the most effective dispatch response regardless of situation or location, efficiencies, and highly functioning organizations can be achieved. Standard operating procedures which are supported by the best wisdom and experience of the industry help to ensure practices that are sound. Coordinated training and supervision with the standard operating procedures and supported by efficient technologies helps to sustain the functions of the agency. |
| Effective governance model that ensures standards of care are realized | A governance model that enables equitable representation of the citizens in management of public safety services and employs decision-making models that focus on standards and service will be the most effective. Achieving the standard of care expectations of the citizens should be the foremost consideration in decision-making methodology within the organization and governmental relationships that do not hinder the agency's ability to function should be a desired goal. |
| Stakeholder involvement in decisions | Representation ensures sound decisions in the best interest of the citizen's needs. Shared decision-making is the essence of public service and a key part of change for improved quality of the public safety communications service. |

| Principle Element | Description |
|---|---|
| | Representational governance is embedded in the ethics of sound government. The understanding that decisions in one part of the region may affect other members of the region is an important concept and a vital approach to more effective operations throughout the region. |
| Faithfulness to principles | Where there is effective public safety communications management and governance in place to ensure faithfulness to the principles held by the community then there is more productive and efficient operations. Adherence to principles of quality which meets the expectations of the citizens will help to drive the region to more effective and efficient service. |

## Achievement of the Principles

Once guiding principles are established, the question of how to best achieve the principles follows naturally. If the principle is the desired state, how can the organization best achieve that state? What needs to occur in order for the environment to be supportive of the desired principle?

> *If you can define how it could be better, then you have not achieved it.*

As GeoComm conducted analysis and assessment of the current environment, it was evaluated against the principles as were various options or models that were developed for possible consideration. Once the GeoComm team began looking at potential feasible models for implementation in the Salt Lake Metro region, it was important to measure those models against the identified principles. In all cases, the service to the public was foremost in our assessment.

GeoComm understands that the finding and recommendations contained in this report may not please some of the participants in the study. In point of fact, it is entirely likely that several of the stakeholders may believe the recommendations are less than desirable from an individual and personal perspective. However, the greater good of improved service to the public at large was the charge of the Utah 9-1-1 Committee to GeoComm, and we believe that to be true to that mission, it was necessary for an unbiased approach to solutions for the region. By using guiding principles that seek improved public service, an independent evaluation was possible.

# 4 Potential Model Evaluation

## Overview

It is the objective of GeoComm to meet the Utah 9-1-1 Committee's project goal of evaluating potential improvements free of any preconceived notion for consolidation. Once GeoComm compiled the existing conditions information for each Public Safety Answering Point (PSAP) and completed the findings and analysis, it was time to consider potential options for the region that would result in improvements for the region's 9-1-1 systems. Equally important in this assessment of potential improvements is the development of guiding principles of enhanced service. Any potential options for improvement must also meet the guiding principles.

As stated in the principles discussion, Section Three, it is GeoComm's position that the Salt Lake Metro region public is best served when the 9-1-1 public safety communications call answering and dispatching model is:

- Efficient
- Cost is equitable and fair
- Service is sustainable
- High level of competency
- Service and operations have a high degree of survivability
- Most effective dispatch response
- Ensures the citizen expected standard of care is implemented
- Stakeholder involvement in decision-making
- Principles and standard of care expectations are upheld by the operations

Using these principles as a guide, the GeoComm team discussed and reviewed six possible models for consideration and evaluation for the Salt Lake Metro region. These six models represent specific configurations for 9-1-1 operations and management.

### Models for Consideration

The following is a high level description of the models GeoComm considered for the Salt Lake Metro region. The models considered include:

- A no change/status quo operations model; the region could continue with the current structure but consider changes that would improve service in the region.

- A regional consolidated Public Safety Answering Point (PSAP); the current primary PSAPs of Salt Lake City Police Department, VECC, and the secondary PSAP of Unified Police Department (UPD) of Greater Salt Lake PSAP have combined operations for call taking and dispatch of the entire region. University of Utah Department of Public Safety and Department of Public Safety Communications Center remain as secondary PSAPs.
- A single regional call center for receiving all 9-1-1 calls in the region; the five PSAPs in the region become secondary PSAPs strictly for dispatching purposes in their respective jurisdictions.
- A three primary PSAP configuration; Salt Lake City Police Department/Fire Department, VECC, and UPD provide call taking and dispatch for their respective jurisdictions. University of Utah Department of Public Safety and Department of Public Safety Communications Center remain as secondary PSAPs.
- A two primary PSAP configuration; Salt Lake City Police Department/Fire Department and UPD combine into a single primary, and VECC continues as a second regional primary. University of Utah Department of Public Safety and Department of Public Safety Communications Center remain as secondary PSAPs.
- A two primary PSAP configuration; Salt Lake City Police Department/Fire Department continue as a regional primary PSAP, and a newly formed combined primary PSAP comprised of the former VECC and UPD PSAPs under a single governance structure is formed. University of Utah Department of Public Safety and Department of Public Safety Communications Center remain as secondary PSAPs.

### No Change/Status Quo Operations

The first model evaluated was no change/status quo operations. This would mean no changes to the current configuration of PSAPs in the region. Salt Lake City Police Department and VECC would remain Primary PSAPs while UPD, Department of Public Safety Communications Center, and the University of Utah Department of Public Safety would continue to be secondary PSAP. Any deficiencies in existence today would remain unless improvements are implemented. Relationships between region's PSAPs remain as is.

GeoComm identified advantages and disadvantages in regards to governance in remaining as status quo.

### Advantages

- Representation from community remains intact
- Cost to operate in the current environment is known
- User fee formula is understood by stakeholders

### Disadvantages

- No improvements in service to the citizens
- Service quality continues to be less than optimal

- Current issues remain unresolved
- Potential for continuing or escalation of frustration
- Mistrust among area PSAP is not resolved
- Call processing time

Looking at the advantages and disadvantages, remaining as status quo does not meet several of the guiding principles:

- Cost to tax payers is equitable and fair
- Governance model that ensures the citizen expected standard of care is implemented
- Faithfulness to the principles held by the community
- Least amount of time between call receipt and dispatch readiness (most efficient method of processing call)

One of the other primary issues with the current configuration is the reality that maintaining as status quo does not resolve the call processing delays due to transfers between PSAPs. GeoComm believes that in order to provide the best 9-1-1 service to the public, stakeholders should require a PSAP structure that provides the least amount of time between call receipt and dispatch readiness.

After looking at other analysis topics, GeoComm determined in areas such as operations, training, technology, redundancy, and funding there were moderate advantages, but also significant disadvantages for the PSAPs to remain as they currently are. However, in comparison to the guiding principles, GeoComm also recognized that there are improvements that can be implemented within the current structure that would enable status quo/current structure to meet the principles. These recommendations for improvements are discussed within Section Five "Service Improvements Within Current Structure."

### One Consolidated Primary PSAP (Salt Lake City Police Department, VECC, and UPD) and Two Secondary PSAPs

For this option, GeoComm analyzed the possibility of a regional consolidated PSAP where the current primary PSAPs of Salt Lake City Police Department, VECC, and the secondary PSAP of UPD PSAP are all combined operations to form a regional call center that focuses on call answering and call processing for the entire region. University of Utah Department of Public Safety and Department of Public Safety Communications Center remain as secondary PSAPs.

#### Advantages

- This potential model does address some of the governance issues associated with status quo assuming a representative structure with participating agencies part of the decision-making process is put into place and there is a mechanism to solicit and receive input from the

jurisdictional agencies and financial support is appropriately shared. In this scenario governance, funding, and operational decisions would be shared. Cooperative agreements would be necessary to establish roles, responsibilities, voting structure, determine appropriate levels of funding support, and decision-making rules.

- In order to meet the Principles, funding authority would need to be created and shifted from existing local revenue based to a regional model. The existing entities would have appointing authority to the regional board. The regional board may choose to contract for service with existing service providers or provide PSAP services by other means. Because of the single point of access to answer all incoming emergency call it is important to have a single governing authority.

**Disadvantages**

- Neither of the two secondary PSAPs, as they currently exist, have adequate means to backup one large regional primary

When looking at the topic redundancy and backup capability, this option could not be considered as a potential improvement for the region. It would not meet one of the basic elements of the principles-survivability.

**One Regional Call Center and Five Secondary PSAPs**

The next model that GeoComm determined as worthy of evaluation against the principles was a scenario of one regional call center for call receiving; and the current five PSAPs in the Salt Lake Metro region serve as the secondary PSAPs.

This regional call center would mirror the model above with regards to funding and governance. The primary difference is that the governance bodies of the current secondary PSAPs, Department of Public Safety Communications Center, and University of Utah Department of Public Safety, would remain intact and responsible for operations and funding dispatch operations, while VECC, UPD, and the Salt Lake City Police Department become secondary PSAPs focusing on the dispatch services of their operations.

In the new Regional operation, governance would likely have a representative structure with participating agencies part of the decision-making process. Governance, funding, and operational decisions are shared. Cooperative agreements are necessary to establish roles, responsibilities, voting structure, funding support, and decision-making rules. There would also need to be a regional governance authority established that would have policy and taxing authority for all Salt Lake City Metro PSAP operations, except the University and Department of Public Safety Communications Center. The membership of the governing board would include equitable representation from the City of Salt Lake, the County of Salt Lake, and the county communities and towns. It would be responsible for establishing regional dispatch policies and procedures and ensuring daily operations. Funding authority will need to be created and shifted from existing local revenue based to a regional model.

The existing entities would have appointing authority to the regional board. The regional board may choose to contract for service with existing service providers or provide PSAP services by other means. Because of the single point of access to answer all incoming emergency call it is important to have a single governing authority.

On the surface this appears to have some significant advantages when viewed in light of the principles.

**Advantages**

- Shared decision-making
- Roles and responsibilities are clearly defined
- Equalization of pay scales, benefits, and work rules
- Single Computer Aided Dispatch (CAD) system established
- Operational cohesiveness
- Service population (and potentially call load/workload) equalized among three primary PSAPs

However, even with these advantages, there are also significant disadvantages that make this option incapable of fully meeting the principles.

**Disadvantages**

- Salt Lake City Police Department/Fire Department consolidation well underway
- Salt Lake City Police Department facility planned
- Call processing delays for Department of Public Safety Communications Center and University of Utah as exists today; no improvement
- Call processing delays for VECC, UPD, and Salt Lake City Police Department as all calls are transferred for dispatch
- Many agencies make for complex structure
- Funding authority will need to be created and shifted from existing local revenue based to a regional model
- Complex organization
- Lack of robust redundancy and backup capability
- CAD system change may require Records Management System (RMS) interface non-existent today
- Initial costs to consolidating (software change for records, CAD, new interface with Adult Detention Center)

Because of the extensive list of disadvantages, and inability to meet the principles, GeoComm determined this option was not feasible nor should it be considered as an improvement for the region.

**Three Primary Call Receiving and Dispatching Centers and Two Secondary PSAPs Serving the Entire Region.**

The next model structure creates a three primary PSAP configuration where each jurisdiction receives 9-1-1 calls from their respective contract service area and dispatches area responders. In this model, the 9-1-1 calls are selectively routed in accordance with the jurisdiction boundary of the PSAP and all public safety response services within the PSAP response area are dispatched from their respective primary PSAP location. The remaining secondary PSAPs continue as currently configured, receiving transferred 9-1-1 calls, with ANI/ALI, from their primary PSAP. In this model, the biggest change would be the transition of UPD to a primary PSAP.

There is an advantage to this model that would meet the guiding principles.

**Advantages**

- With three primary PSAPs in the region, robust backup and redundancy plans could be established

However, when examining the disadvantages of this model, there are several aspects that do not meet the guiding principles:

**Disadvantages**

- CAD to CAD interface support and maintenance costs must continue
- Duplication of services
- Higher costs to taxpayer
- VECC loses call volume and financial support
- UPD adds cost to county and further costs to member governments
- Funding distribution is not resolved
- Resistance to additional primary when focus is on regionalization and collaboration
- May be considered a "quick fix" and not really address the long standing issues
- Unless communities using Unified Fire Authority (UFA) agencies make a decision to use one and only one primary PSAP for all their call receiving and call dispatching services this model does not meet the principle of the efficient call processing

These issues are directly contrary to the principles of a PSAP model that results in the least amount of time between call receipt and dispatch readiness (most efficient method of processing call). GeoComm believes that in order to provide the best 9-1-1 service to the public, stakeholders should require a PSAP structure that provides least amount of time between call receipt and dispatch readiness (most efficient method of processing call).

Because this model is clearly favored by some PSAP(s) in the study and much advocacy for its consideration was presented to GeoComm, and it was essential that serious and thorough evaluation for its potential be assessed. The GeoComm project team deliberated long and hard over the merits and shortcomings of this three primary PSAP model. While redundancy might be improved by the existence of a third primary PSAP, ultimately, it was clear that the duplication of services are unnecessary and costly for the county and its member communities and did not warrant the recommendation as an optimum model. This model would mitigate some of the survivability risks by providing redundant systems that can be adequately protected, but a third PSAP did not resolve the funding, transferring, and day-to-day efficiency issues prevalent between the two agencies.

### Two Primary PSAPs and Two Secondary PSAPs

In this model, the Salt Lake City Police Department/Fire Department and UPD merge into a single primary and VECC continues as the second regional primary PSAP for all call taking and dispatch operations. University of Utah Department of Public Safety and Department of Public Safety Communications Center remain as secondary PSAPs.

Under this configuration, the communities involved in these jurisdictions would need to determine their primary PSAP for agencies in their jurisdiction. Either VECC or the consolidated Salt Lake City/UPD PSAP would be selected as the primary PSAP for both receipt of their community's 9-1-1 calls and dispatch of services to their citizens. No transfer of 9-1-1 calls to another agency for dispatch would occur. 9-1-1 calls would be selectively routed by jurisdiction.

When looking at governance, implementation of a consolidated Salt Lake City/UPD primary PSAP would require the governing bodies of both to enter into a contract to provide 9-1-1 call taking and dispatch services for members. The agreement would need to establish authority for foundational items such as budget, cost-sharing methodologies, personnel issues, structure, and compensation.

The Salt Lake City/UPD PSAP organizational structure could include the full consolidation with Salt Lake City PSAP staff handling both call taking and dispatch and a contract for services with UPD for dispatch responsibilities for the UPD jurisdictions.

There are some advantages of this model that relate directly to the principles.

### Advantages

- A governance model could be established that ensures the citizen expected standard of care is implemented

- This scenario also improves redundancy and backup by have two primary PSAPs in the region with the potential to handle increased call volume capacity should one of the primary PSAPs be rendered inoperable

**Disadvantages**

- Call transfer and potential delays

The model does not meet the principles when it comes to transferring calls and potential delays for the 9-1-1 caller. The principles also require appropriate protocols and technology to be in place to ensure the most effective dispatch response regardless of situation or location Unless the UFA arrangement which requires VECC to dispatch their departments changes, there will always be communities having law enforcement dispatched by one agency and fire by another.

In addition, there is impact on current Salt Lake City Police Department/Fire Department consolidation plans which are well underway as well as a planned new facility.

This model also presumes that the Salt Lake City would entertain a merger with UPD and that the operations area of the new PSAP (2013) would have the space, supported by adequate equipment installed. No discussions between these parties have actually taken place that GeoComm is aware of, to date.

Due to these issues, GeoComm determined it was not a good solution for the metro area and moved on to the final scenario for consideration.

**Two Primary PSAPs (Salt Lake City Primary and new UPD/VECC Primary) and Two Secondary PSAPs**

The other version of the two primary and two secondary scenario that is worthy of consideration is a two primary PSAP configuration; Salt Lake City Police Department/Fire Department continue as a regional primary PSAP, and a newly formed combined primary PSAP comprised of the former VECC and UPD PSAPs under a single governance structure is formed. University of Utah Department of Public Safety and Department of Public Safety Communications Center remain as secondary.

When looking at this model compared to the principles, it does meet many of the goals for 9-1-1 service in the region.

**Advantages**

- Currently VECC and UPD stakeholders can be involved within both governance structures. This model would require a new governance structure that provides equal representation within the newly formed PSAP. This type of equal representation would allow stakeholder involvement in decision-making to ensure citizen expected standard of care is attained.

- Two primary PSAPs provides the opportunity for 9-1-1 service and operations have a high degree of survivability
- Cost structure to tax payers is equitable and fair
- Least amount of time between call receipt and dispatch readiness (most efficient method of processing call)

These are just a few of the advantages that the GeoComm team initially determined in regards to this model. Because of these advantages, GeoComm determined that it was worthy of in-depth analysis; Section Six, Optimum Service Model.

# 5 Service Improvements Within Current Structure

## Overview

**Service Improvements Within Current Structure**

The status quo model, by definition makes no changes to the current configuration of Public Safety Answering Points (PSAPs) in the region. Salt Lake City Police Department PSAP and Salt Lake Valley Emergency Communications Center (VECC) would remain primary PSAPs while Unified Police Department (UPD) of Greater Salt Lake PSAP, Department of Public Safety Salt Lake Communications Center, and the University of Utah Department of Public Safety PSAP would continue to be secondary PSAPs. However, GeoComm realizes that there are service improvements to operations that can occur without the implementation of major structural changes at any of the existing PSAPs.

GeoComm recommends changes to the governance structures, financial resource distribution, and operational processes to more effectively and efficiently provide public safety services to the citizens while keeping relationships between the area PSAPs as they are currently.

## Governance

Within the current PSAP configuration some very significant changes and enhancements in existing governance structures are highly recommended. This action is important and necessary to resolve the current conflicts that exist regarding past policy decisions and the perceived disparity with distribution of surcharge funding.

### Recommendations

**PSAPs Should Form Several Joint Regional Working Committees**

GeoComm anticipates that public safety agencies from across the region would work on the issues in a collaborative fashion and form working committees to look at regional issues. The working committees would be made up of appropriate and interested parties, and they can come together to discuss strategies for addressing issues impacting the region.

Topics that are appropriate include:

- Joint development of Standard Operating Procedures (SOPs) for call transfer and joint response
- Multi-agency Computer Aided Dispatch (CAD) task force
- Development of Regional Minimum Training Standards for all levels of PSAP personnel
- Master Street Address Guide (MSAG) and GIS standards, cleanup processes and Next Generation GIS/MSAG synchronization planning
- Enhanced Continuity of Operations planning

- Regional NG9-1-1 implementation planning

In addition to the establishment of the joint regional working committees to focus on region wide issues, there are areas for potential improvement that the governing bodies of each organization should consider:

- Interlocal cooperation agreements, bylaws, or operating documents should reflect current practices or followed as written.
- Membership and practices at each PSAP should ensure a representative Governing Body for the entire service area and all service users.
- An Operations Board should be advisory to the Executive Director or Chief Operating Officer on operational matters impacting the users.
- An Executive Director should be responsible for implementation of operational procedures based on recommendations from a Board. Policy issues should be presented for formal action by the Board of Trustees or Policy Board.
- Salt Lake City Fire and Police Department PSAPs specific recommendation:
  - The agencies are in the process of combining operations in a new facility with changes planned for combining personnel and creating a new city department, governed by representatives from police, fire, and the mayor's office. The city is in the process of hiring an Executive Director to manage the new center. It is important that the new director collaborate with management from other area PSAPs to discuss and resolve issues that are beneficial to the region.
- VECC specific recommendations:
  - The current bylaws of VECC state in Specific Provisions 8(e), "The director shall serve at the pleasure of the Board of Trustees (Board). The director shall report to the Board of Trustees." The VECC organization chart provided to GeoComm indicates that the Executive Director reports directly to the Operations Board. This was confirmed by representatives from both the Board of Trustees and the Operations Board. Practices should reflect the governing documents of the organization.
  - The VECC Executive Director should report to the Board of Trustees and be responsible for all aspects of the day-to-day operations. It is necessary to establish a very clear line of authority recommendation and approval of both procedural and policy issues. The Interlocal Agreement, paragraph nine, provides for the Operations Board to serve as the executive body of the center and responsible for day-to-day operations of the center. This arrangement undermines the authority of the VECC Executive Director. GeoComm recommends that the structure be clarified or revised so that the Operations Board becomes a standing committee. The committee membership would remain representative of the public safety agencies that are members of VECC. This committee should make operational recommendations to the Executive Director.
  - Section 10 of the VECC Interlocal Agreement provides for the financial affairs of VECC. Even though paragraphs 10(a) through 10(g) gives an overview of how assessments to members are established, GeoComm recommends that more detail as to how dispatch incidents are counted be included in the Interlocal Agreement itself. While GeoComm agrees that for budgeting purposes, the Dispatch Assessment is the average over a three year period, the method for determining the number of incidents dispatched has changed over time. VECC should not

customize services for each community. Such individualization renders call taking and dispatch services ineffective and increases risk to the agency. 9-1-1 operations must be consistent in order to provide high quality service. While GeoComm certainly recognizes the agency's right to provide service in this way, we also note that the agency and the policy makers should be aware that such agency-specific call handling adds cost and complexity which GeoComm does not think is necessary. The guiding principles identify the desire for the highest quality service in the most cost effective manner. Specific adjustments for each community which requires specialized dispatch services should be discouraged.

# State Direction and Oversight

H.B. 36 (2004) created the Utah 9-1-1 Committee and was codified in Utah Code, Section 53-10-601. This legislation directs the Utah 9-1-1 Committee to provide recommendations on technical, operational, and financial issues related to statewide wireless E9-1-1 issues. The Utah 9-1-1 Committee is charged with making recommendations to the Bureau of Communications, PSAPS, and the Legislature on the technical and operational issues surrounding the implementation of a unified statewide wireless and land-based E-911 system. The Utah 9-1-1 Committee is responsible for "specific technology and standards for the implementation of a unified statewide wireless and land-based E9-1-1 emergency system." However, GeoComm is not aware of any standards that exist.

Strategic planning is an organization's process of defining its strategy, or direction, and making decisions related to allocating its resources to pursue this strategy. In order to determine the direction of the organization, it is necessary to understand its current position and the possible avenues through which it can pursue a particular course of action. A strategic planning process should end with objectives and a roadmap of ways to achieve them. The goal of strategic planning is to increase clarity in the mission and a defined method to achieve that mission.

## Recommendations

### Utah 9-1-1 Committee Should Develop a Strategic Plan

GeoComm finds that the State of Utah lacks a cohesive and coordinated plan for E9-1-1 services that encompass both the local needs and statewide mission. The Utah 9-1-1 Committee, within its authority, should convene a comprehensive strategic planning effort. A strategic plan would assist the committee fulfill its responsibility to the statute by defining a "statewide unified wireless and land-based E9-1-1 emergency system" and how the Utah 9-1-1 Committee proposes to ensure its implementation. In addition, a strategic plan would provide guidance for the PSAPs in making funding requests and the Utah 9-1-1 Committee in that the committee would have a basis for accepting or rejecting a funding request if not consistent with the strategic plan.

At a minimum the strategic plan should address:

- Planning - GeoComm recommends a comprehensive planning process that will define how planning is conducted; how frequently the strategic plan is updated; what elements should be included; and who is considered a participant or interested party.
- PSAP Criteria - the state should determine minimum criteria required to be a PSAP in the State of Utah; direction on the format and use of the ECaTS data, and minimum network infrastructure requirements especially with a view to the transition to Next Generation 9-1-1 (NG9-1-1), and minimum training requirements for call taking and dispatching staff that meet national standards.
- Refined Guidelines for 9-1-1 Fund Requests - development of a more thorough format for PSAP funding requests so that the request references the specific authority of the Utah 9-1-1 Committee function, aligns with the state E9-1-1 strategic plan, outlines the costs and amount of funding requested, and provides appropriate documentation for the official Utah 9-1-1 Committee records so that future references and comparison is possible.

This strategic planning initiative should be facilitated by a professional, independent party to assist the Utah 9-1-1 Committee to focus on the outcome of the plan rather than the mechanics of conducting such an effort. Because the Utah 9-1-1 Committee is inclusive of all the state public safety and 9-1-1 communications stakeholders it is the appropriate vehicle for conducting a strategic plan. Every effort should be made to ensure that the process is collaborative and addresses needs of the local public safety agencies, the Utah 9-1-1 Committee, and the public expectations for 9-1-1 service. Regional representatives should be required to include all members of their region in the process and as part of the position development by the region as a function of the strategic planning process. The strategic plan should focus on the development of a statewide roadmap that clarifies the roles and responsibilities of local agencies, the Utah 9-1-1 Committee, adopts principles and guidelines for a "statewide unified wireless and land-based E9-1-1 emergency system."

**Utah 9-1-1 Committee Should Adopt Standards**

It has been demonstrated that standards, when properly established and implemented, help to ensure consistent service levels, reduce costs and risks, and improve efficiency. To be highly effective, 9-1-1 and PSAPs benefit from standards and guidelines as does any critical public service. Development of standards will require an inclusive and collaborative effort among all the state 9-1-1 stakeholders as members of the Utah 9-1-1 Committee to ensure a comprehensive process.

GeoComm recommends the Utah 9-1-1 Committee establish appropriate minimum standards promoting both the guiding service principles and the necessary guidelines for a "statewide unified wireless and land-based E9-1-1 emergency system."

The Salt Lake City region and the state would benefit from standards, established by the Utah 9-1-1 Committee, with regard to minimum training, minimum staffing, technology, GIS maintenance, and synchronization, minimum criteria to be a PSAP, format, and use of the ECaTS data, etc. In addition, there should be minimum network infrastructure requirements especially with a view to the transition to NG9-1-1.

At a minimum, the Utah 9-1-1 Committee standards development should include discussion of the following elements:

- PSAP Criteria - minimum trunk capacity; annual trunk capacity analysis; database accuracy requirements such as no record found threshold; call answer time; call processing time requirements and other related criteria to ensure efficient and effective 9-1-1 service.
- Training - initial and Continuing Education Units (CEUs) training programs that meet nationally accepted industry standards. Emergency Medical Dispatching (EMD) - should be required and minimum training established; Quality Assurance/Quality Improvement program required.
- GIS - data accuracy and data maintenance levels should be established that meet NENA criteria.
- Staffing - appropriate minimum staffing levels should be established.
- PSAP Survivability - standards or guidelines on the minimum level of Continuity of Operations Planning that should be conducted to ensure, to the degree reasonable and possible, ongoing operation in the event of service failures or other natural events that cause service interruption.

## Operations

As established earlier in this report, the Salt Lake Metro area is currently served by five PSAPs, two primary PSAPs and three secondary PSAPs. The primary PSAPs, which answer the 9-1-1 calls first, include VECC and the Salt Lake City Police Department PSAP. Calls for service from areas which are dispatched by other PSAPs are then transferred to one of three secondary PSAPs (UPD, University of Utah Department of Public Safety, and Department of Public Safety Salt Lake Communications Center). The PSAP structure is not unusual or inherently faulty; however, operational and technology choices can create interagency stresses as incident information is passed between centers.

The current environment and resources are, for the most part, adequate to complete the average workload on a daily basis. The PSAPs are self-sustaining and self-directed with adequate fiscal resources.

The status quo; however, is not without opportunity for improvement. The direct public safety and service obligations of the VECC and UPD PSAPs have been weakened by various levels of inter-PSAP competition for customers and associated funding.

The emphasis to gain more political and financial support has overshadowed the effective planning for PSAP redundancy and diversity, diminished the opportunities for shared alternate facility planning, and cross training and awareness of staff.

Decisions by some communities to split their dispatch by discipline between the VECC primary PSAP and the UPD secondary PSAP causes significant operational issues day-to-day. Unnecessary and protracted call interrogation, hesitancy to transfer calls until all report details can be adequately entered into a call management system, and cumbersome procedures to address individual agency dispatch arrangements which vary from agency to agency contribute to call processing delays.

## Recommendations

### Collaborate on SOPs Affecting Call Handling and Dispatch Procedures to Reduce Delays Caused by Transfers

To improve the current environment, the role of coordination and collaborative planning should be encouraged, in order to represent the interest of the public and field responders through joint focus groups. The existing PSAPs should conduct joint planning to fully develop comprehensive call-transfer procedures, data sharing technology, collaborative training opportunities, training standards, Continuity of Operations Planning (COOP) to assess the realistic capability to survive and then sustain effective emergency communication functions during a disaster or service interruptions longer than just a few hours.

A review of current national standards, modified if necessary for the Salt Lake Metro region should be conducted and maintained in order to establish a community standard of care position. The 2010 Edition of NFPA 1221, Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems, describes the following performance criteria for call transfers, "Where alarms are transferred from the primary public safety answering point (PSAP) to a secondary answering point, the transfer procedure shall not exceed 30 seconds for 95 percent of all alarms processed."[1] As noted within the Findings Section, while this is a fire services-based standard and technically applies only to fire and EMS calls that are transferred for dispatch, GeoComm believes these standards outline an effective practice and a reasonable measurement for all PSAP operations.

Chapter 8 of the same document reinforces the need to make the transfer: "When a PSAP receives an emergency call for a location that is not in its jurisdiction or a call for an agency not under the control of the PSAP, the PSAP shall transfer the call directly to the responsible communications center, when possible."[2] The PSAPs should jointly adopt accepted performance goals for the region.

[1] NFPA 1221, Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems, Chapter 7, paragraph 7.4.4
[2] NFPA 1221, Chapter 8, paragraph 8.3.2

GeoComm acknowledges the necessity to verify that the location of emergency/event and that the caller is within a jurisdiction not served by the primary PSAP can and does create some issues; however as the Principles identify, every effort should be made to meet the recommended metric for processing calls from the answering PSAP to dispatch readiness.

It is understood that VECC seeks to properly and fully identify and enumerate each event which is created in CAD by locality for several reasons; this effort should, however, be supported by appropriate and coordinated SOPs which support the prompt and effective transfers of such calls by both the agencies involved.

**Abandoned Calls**

The Salt Lake Metro area PSAP community experiences high abandoned call rates. The reason for this is unknown, but interviews with PSAP personnel report that many of the abandoned calls are due to wireless callers.

As GeoComm has already noted in the Findings Section of this report, the Existing Conditions Report showed that the two primary PSAPs' experience a relatively high number of abandoned calls. In addition, the abandoned call rates were also noted to GeoComm by VECC leadership as a concern and a strain on resources. The fact that both primary PSAPs are significantly higher than the national average suggests there may be other underlying issues contributing to this high abandoned call rate.

The region should work together to conduct further study into the underlying cause of abandoned calls and may want to incorporate a mitigating strategy in the area's public education efforts.

**Transfer Delays**

The CAD interface data bridge used between VECC and UPD allows 9-1-1 call data to be sent to the UPD PSAP once the location and event type has been entered and accepted in the VECC CAD system. UPD can then "see" that a call for services has been created which will need to be dispatched from the UPD PSAP. As in all public safety dispatch centers across the country, the availability of field resources and the priority of the call influence actual dispatch assignment; a lower priority call and unavailable units may cause a call for service, even one that arose from a 9-1-1 call, to wait in a queue for some time before resources are actually sent to the location. While the event type and responder availability are factors beyond the immediate control of the call taker, the goal should be to move the call to the "dispatch agency" as soon as possible.

GeoComm recommends that VECC and UPD jointly develop call transfer protocols acceptable to the needs of each agency and in alignment with the Principles of the most efficient method of call processing and ensuring the citizen standard of care expectations are met.

Further, GeoComm recommends that the PSAPs should develop a shared definition of Call Answering, Call Processing, and Call Transfer time limit goals for completing the required activity. A single universally accepted timing interval should be defined and demonstrated by all staff handling 9-1-1 calls at each PSAP.

**Data Sharing Process Requires Additional Resources and Coordination**

As described in Findings, the CAD2CAD interface data bridge in place between the VECC and UPD PSAPs has improved the data transfer capabilities between the two disparate systems. However, while the system does permit subsequent updates to a call under specific conditions, the functionality requires additional resources and coordination, adds complexity, and potential points of failure to the systems.

The dual personnel/dual agency involvement required on some calls requires additional resources to be employed and additional coordination at the UPD or VECC to link the two call records. There is potential that critical call information can be lost when such complexity is present. Subsequently, if the open status is not present and additional interrogation by UPD results in the need for services dispatched by VECC, a new call is initiated by UPD and sent to the VECC for dispatch. Such complicated processes, with much potential for error and delay are not recommended by GeoComm.

**Inconsistent and Community Specific Protocols Cause Confusion and Delay**

GeoComm found that the individual and specific community or agency protocols challenge the ability to meet the guiding principles.

GeoComm did observe the VECC practice of supporting extended caller inquiry prior to dispatch of level A and B medical calls. It was reported that when inquiry reaches the two minute time mark to ensure that adequate information is obtained, the call would be dispatched based upon the information available.

Within other operational areas, the common protocols per event type may have variances due to the preferences of local client agencies. This method also creates inconsistency for dispatching each agency in the VECC service area. While the NAED protocols, which VECC follow, do allow for such flexibility and modification to standard operating practices, the agencies must be aware that to do so adds time on calls and can delay the initiation of response while also increasing staff time needed on each call.

In keeping with the Principles of seeking the highest quality public safety service in the most cost effective manner and the most efficient method of call processing, PSAPs should be discouraged from inconsistent protocols which impact call processing and compromise the call taker or dispatchers ability to provide effective service. GeoComm recommends that PSAP decision-makers discourage multiple local variations to the common protocols, per event type and maintain industry standards.

# Staffing

GeoComm conducted a staffing analysis for each of the existing five PSAPs based on the total reported emergency and non-emergency call volume and coverage positions required under the current PSAP configuration. The purpose of this assessment was to determine whether any of the existing PSAPs are currently operating in a significant "staff shortage" condition.

GeoComm's assessment results indicate that all current PSAPs have sufficient staff resources authorized to enable managers to dynamically assign personnel to provide adequate coverage during routine and normal peak call activity durations to achieve the goal of answering 90 percent of calls in less than ten seconds.

## Recommendation

**Continue to Monitor Authorized Staffing Levels**

GeoComm recommends that the agencies continuing to monitor authorized staffing based on call volume, dispatch statistics, field units, and dispatcher ratios to ensure continued adequate staff resources.

Based on the sporadic pattern of call receipt, staff resources must be strategically assigned across all shifts. It should be noted that the staffing conclusion is based on authorized positions and not currently filled or trained positions.

# Facilities

In the status quo, the existing facilities would remain and change only as currently planned. It should be noted that any facility in the region has risk due to being located within an earthquake seismic zone. The Salt Lake City Police Department PSAP has limited space for expansion; however, the proposed new Salt Lake City PSAP facility appears adequate for current service demands and should greatly improve the City of Salt Lake limitations. The relocation of the Salt Lake City PSAP into a new facility offers an opportunity to dedicate space for training, which could also potentially be used as an alternate facility option for both Salt Lake City and other area PSAPs, specifically Department of Public Safety Salt Lake Communications Center and the University of Utah Department of Public Safety.

The VECC and UPD facilities have sufficient space for the current operations. VECC has the luxury of significant space available for expansion should that be pursued. The University of Utah space is lacking in long-term survivability, space is crowded, and supervision and support personnel are separated from the dispatch operation. Department of Public Safety Salt Lake Communications Center facility is adequately functional but expansion is extremely limited.

Both VECC and Salt Lake City Police Department have sufficient facility capacity to allow for enhanced backup of other PSAP operations.

All PSAPs have participated in some high level planning for ongoing operations during failure events of moderate or short duration.

As noted in the Findings Section, the University of Utah facility did have a building study performed on their dispatch center in June of 2011. That study noted that "The building does not meet the structural and seismic design standard of an "essential facility" required for all Public Safety buildings." In addition to the long-term survivability, and as mentioned above, GeoComm found the space to be crowded, and an arrangement where supervisors and support personnel are separate from the dispatch operations is not ideal.

### Recommendation

**Better Utilize Existing PSAPs for Alternate Operations Purposes and Transition the University of Utah Department of Public Safety PSAP to a More Suitable Facility**

GeoComm recommends consideration of facility configurations that would allow for a number of positions to be located in such a manner to serve as an effective alternate location for the other regional PSAPs should their buildings become uninhabitable for any reason.

GeoComm recommends the University engage in a search for a more adequate campus structure that will help to ensure a higher level of survivability for the University 9-1-1 operation.

## Redundancy, Diversity, and Continuity of Operations Planning (COOP)

The public expects full service during an emergency which requires PSAPs to have extensive continuity of operations plans in place. The obligation to ensure reliable public safety services will become more difficult, absent a coordinated effort to provide adequate space and supporting technology to continue a shared high level of service across the region. Local costs and efforts will be more expensive and extensive than those arising from a cooperative arrangement as the competiveness for funding, qualified staff and technology becomes apparent to the smaller PSAPs.

The current environment does provide separate Central Office services for three of the five PSAPs connected to the single selective router; VECC and Salt Lake City Police Department are served by different Central Offices. In addition, VECC reports it is served by geo-diverse SHARPS ring through the Kearns Central Office. VECC is served by two NG9-1-1 Emergency Call Management Center's (ECMC's) and Legacy Network Gateway (LNG) for wireless 9-1-1.

They report plans to move the VoIP and wireline circuits to the Internet Protocol (IP) network in May and depending upon the IP network functionality they may no longer be dependent on the legacy selective router.

All of the PSAPs in the county are served by the same selective router, centralizing failure potential for all PSAPs and area 9-1-1 service. The single selective router serving all the Salt Lake Metro area PSAPs is not presently supported by any other, creating a single point of failure risk to daily operations.

The reliance upon any single element, the failure of which could result in a substantial interruption of service does, however, create legitimate concerns and is not resolved in the status quo. Currently, VECC plans to maintain connectivity to the single selective router until all area PSAPs have migrated to IP. The specific timeline for this is unknown but is generally expected to be a protracted period of time.

Connectivity to a single selective router for such a large population center poses significant vulnerability for continuity of operations for all of the Salt Lake Metro area PSAPs should an event impact that selective router and interrupt service. GeoComm is aware that the Utah 9-1-1 Committee has deliberated the value of connectivity of all PSAPs to a second and determined that it was in the best interest of the citizens in the state to locate the second selective router in the southern region of the state. In doing so, the PSAP service was divided between the two selective routers. The Utah 9-1-1 Committee also determined that the transport costs to connect the Salt Lake Metro area PSAPs to the second selective router were cost prohibitive. GeoComm recommends that the Utah 9-1-1 Committee consider re-opening this discussion with the 9-1-1 service provider, CenturyLink, to determine if lower costs for transport may now be available or could be negotiated. If lower cost negotiations do not prove beneficial, the Utah 9-1-1 Committee may want to consider a competitive bid for transport of the 9-1-1 traffic to the second selective router. The Committee will need to evaluate if costs associated with upgrading the current network is desirable or if accelerating the migration to NG9-1-1 services might serve the communities more effectively. Long range strategic planning should help to clarify direction for the Utah 9-1-1 Committee policy decisions.

### Recommendation

**Enhance PSAP Survivability**

The region should undertake steps to conduct a survivability assessment using industry recognized analysis tools to determine the vulnerabilities of the region's communication centers and embark on a collaborative planning effort to mitigate potential risks.

- Emergency planning should include the self-healing capabilities of NG9-1-1 equipment, supported by robust redundancy and diversity of the public switched telephone network and additional connectivity to an alternate selective router diminishing potential service interruptions.
- The region should conduct an annual update to the regional COOP plan effort to ensure the plan reflects the current environment and includes appropriate training and exercises.
- The region's PSAPs should collaboratively create a fully functional backup communications center for the region that can be activated if any of the PSAPs experience a situation that requires they evacuate their current location.
- In addition, the soon-to-be-vacated Salt Lake City Police Department PSAP facility, with already installed equipment and a moderate amount of floor space, might be an adequate location to retain as a backup facility either for new Salt Lake City Police Department/Fire Department PSAP or as a regional backup available to any of the PSAPs. It is geographically fairly close to the new Salt Lake City PSAP building, however, it is suitability as a backup facility should be investigated further.
- The Utah 9-1-1 Committee should engage CenturyLink in cost negotiations for additional connectivity to the second selective router in the state to seek affordable transport cost or seek alternate providers for the service.
- Investigate dual selective router opportunities and alternatives to reduce network risk to further mitigate system vulnerabilities and potential failure points.
- Initiate an investigation into the costs and process required to implement Telecommunication Service Priority (TSP) to ensure priority service restoration for critical communications systems during catastrophic events affecting the region. Include any essential communication service such as 9-1-1 circuits, other appropriate telephony, 9-1-1 non-emergency outgoing lines, radio circuits for dispatch functionality, and connections to other essential services such as National Crime Information Center (NCIC).

## Training

Within the current structure, there are service improvements that could be realized through a regional approach to training. Although there are documented training programs at each PSAP, there are varied approaches to training in terms of content delivery, length of training, performance evaluation mechanisms as well as disparity in training for trainers. Training programs have not been evaluated for consistency with nationally recognized telecommunicator training standards

There are significant advantages to be gained in regards to adopting minimum training standards, establishing standardized and consistent call processing protocols, and enhancing the skills of and maximizing the expertise of a professionally trained instructor cadre across the region.

## Recommendations

### Ensure Compliance with State and Federal Training Mandates

Each PSAP should fully comply with all training mandates as required by state and federal law. These mandated training courses include:

- State of Utah Basic Public Safety Dispatcher Training Program
- State of Utah Bureau of Criminal Identification (BCI) Training
- Emergency Medical Dispatch Training
- ADA/TTY Training (initial and in service) as mandated in the Americans with Disabilities Act (ADA) and the Department of Justice Title II compliance requirements

### Comply with Minimum National Training Standards for Public Safety Telecommunicators

Each PSAP should comply with APCO ANS 3.103.1-2010: Minimum Training Standards for Public Safety Telecommunicators. This is a nationally recognized minimum training standard for both new and veteran Public Safety Telecommunicators. Agencies are encouraged to submit their training program for evaluation of their program's compliance to this standard.

### Conduct a Comprehensive Training Audit

Each PSAP should conduct a comprehensive training audit which evaluates consistent links between job descriptions/duties, essential job functions, hiring standards, performance expectations, and training outcomes to specific elements of the internal training program for each level of employee in the organization.

### Professional Instructor Training Should be Conducted

Each PSAP should provide appropriate levels of instructor training for various types of training being provided. The skills sets for on-the-job trainers differ from skills sets needed to present classroom training and develop training curriculum. Each trainer position requires professional training to ensure trainers are effective at providing learning opportunities for trainees.

On-the-job trainers should be trained in a professional Communication Training Officer (CTO) course and the agency training program should be based on formal CTO program concepts.

Classroom trainers and training developers should be trained in instructional design and delivery concepts based on the Instructional Systems Design (ISD) model.

Without an integrated approach to training, curriculum development tied to job function and performance expectations, the agency approach to addressing training needs in ineffective.

## Technology

GeoComm visited each of the existing PSAPs and conducted a high level review of technology in place to support PSAP operations. Interviews were conducted with competent individuals possessing specific knowledge of each PSAPs deployed technology and the equipment maintenance and the presence or absence of end user radio training. Based on the observations and interviews, GeoComm concludes that each of the existing PSAPs have adequate communications technology in place to effectively meet its public safety communications responsibilities and to provide effective communications support to field operations.

As noted in the existing conditions report, there are two primary CAD systems operated in the Salt Lake Metro area. The system used by VECC and the system used by UPD have been linked together through a CAD2CAD bridge data interface so that vital call information can be electronically sent to UPD once information is entered into the VECC system. After the electronic transfer of the initial call data by VECC, each change to the call record from VECC i.e., nature code, call status, narrative information, is automatically transferred to UPD. It is GeoComm's understanding that after the initial electronic transfer of call data from UPD, any nature code changes are automatically transferred to VECC, but any other transfers of call data must be manually transferred and require additional staff interaction to transfer the data.

As already noted in the Findings Section, this arrangement has potential for failure and adds complexity to the technology. Installation of the data interface and its ongoing maintenance is quite expensive.

Consistent radio naming schemes are a vital component to effective interoperability. Nomenclature among all agencies in a region enhances the interoperability in the region, helps to ensure efficiency when mutual aid is required and offers another level of responder safety. Public safety radios used by responders in the region should be similarly programmed to enhance interoperable communications.

Each PSAP has emergency generators that provide power to the facility when there is an interruption in commercials power. While it was reported that some PSAPs exercise the emergency generator on a regular basis, GeoComm was not able to locate specific policies outlining specific testing standards nor is there sufficient generator testing documentation.

- There is an additional ten channel single Motorola SmartNet 800 MHz system that is currently used by the Salt Lake City airport for their radio communications. This system serves as a backup system if the City's system fails. In order to fully utilize this resource, these talk-groups should be added within the Salt Lake City PSAP.

- The University of Utah Department of Public Safety utilizes an e-phone emergency system across the campus. The some of the e-phones are wireless that operates on the same frequency as University of Utah security force. This causes an issue when the e-phone battery is low because it sends out an alarm that ties up the frequency and interferes with its intended purpose.
- During the University of Utah Department of Public Safety interviews, it was noted that there are radio system coverage issues with the Utah Communication Agency Networks (UCAN) and VHF radio systems specifically in some of the high occupancy campus buildings and the research park area.
- The dispatch consoles operating software has not been updated since 2005 and agencies wanting to upgrade their dispatch consoles cannot due to the connectivity to the UCAN radio network will not support the newer technology.
- All agencies operating on the UCAN radio network only have their alias table updated monthly while Salt Lake City updates their alias table immediately when radio swaps occur. The delay of updating the alias table could endanger the safety of the first responder in emergency situations.

## Recommendations

### Multi-agency CAD Task Force Should Address Disparate System Issues

GeoComm recommends the establishment of a multi-agency CAD task force to examine the issues impacting the various CAD systems operated throughout the region. The task force should examine the functional requirements of the systems, information and data exchange issues, technical needs, and parameters to ensure that the goal of a well-coordinated regional system is met. This task force is one component of the working committees recommended under governance.

### Mission Critical Systems Should be Protected

All mission critical equipment should be tied to uninterruptable power sources and emergency power generators. Emergency power generators supporting public safety communications should be exercised weekly under-load; generator fuel capacity should allow a minimum of 96 hours of operations.

### Radio Improvements Enhance Functionality

Several improvements to the radio communications technology used in the region would enhance functionality of the systems. Those to be considered are:

- Ensure radio end users have ongoing radio operations training to ensure that interoperable communications can take place in the region when necessary.
- Ensure all national mutual aid frequencies are present in dispatch consoles.
- Ensure all components are tied to a standardized clock to ensure synchronization of time.
- Install local RF control stations at each position in case of console failure.
- Standardize fire, police, and national mutual aid frequencies naming.

- Activate the five remaining additional frequencies on the Salt Lake City's Motorola SmartNet 800 MHz radio system. These five frequencies are currently used by the airport as a part of their 10 channel single site Motorola SmartNet 800 MHz system.
- Switch the e-phone operations at the University of Utah Department of Public Safety, from current VHF frequency to hardwire or another operating frequency.
- Address coverage issues with the UCAN and VHF radio systems in campus buildings.
- Agencies wanting to upgrade their dispatch consoles should work with UCAN to update the dispatch consoles to the latest technology.
- Request that UCAN update the alias table in a timely manner, thus improving the risk to the safety of the first responder in emergency situations.

## Interoperability

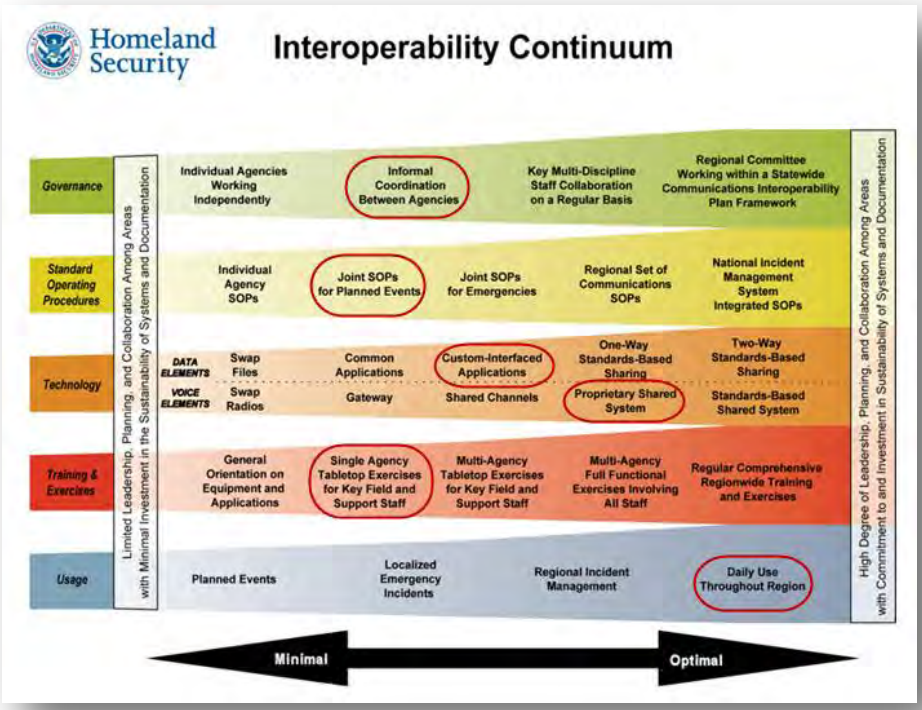
A Tactical Interoperable Communications Plan (TICP) is intended to document the interoperable communications resources available, who controls each resource, and what rules of use or operational procedures exist for the activation and deactivation of each resource. The TICP is a resource to public safety agencies during emergency situations.

GeoComm observed that individual PSAPs did not always know what a TICP was or have current copies of the regional TICP readily available. When GeoComm consultants inquired of PSAP staff if the TICP was available, accessible, and if they were trained on it, responses varied. Responses included "no," "yes," "there is a TICP, but it was not ready for distribution," or "do not know if one exists and if it does exist, do not know where it is located."

Although there are robust systems in the region to provide interoperable communications between field units of various public safety agencies, it was reported by all of the study PSAPs that there is no ongoing training conducted for field responders with regard to radio system capabilities and operational procedures. TICP are an essential operational tool for the PSAP. None of the PSAPs were able to produce their TICP to GeoComm upon request.

The U.S. Department of Homeland Security has developed an Interoperability Continuum chart as a tool for improving emergency response communications and interoperability. The chart identifies five critical elements to achieve the best interoperability solution.

The elements are governance, SOPs, technology, training and exercises, and usage of interoperable communications. GeoComm has used the Interoperability Continuum to evaluate current levels of interoperability and recommends the Salt Lake Metro region utilize the tool to track progress in strengthening interoperable communications across the area. The following chart reflects GeoComm's assessment of the current operating environment in the region.




## Recommendations

### Strengthen Interoperability Awareness at the PSAPs

- The individual PSAPs should have the regional TICP readily available. Appropriate PSAP personnel should be familiar with the TICP.
- Schedule regular communications training sessions addressing the current and changing operational environment. Regular training and exercising will improve the ability to interoperate both under routine service conditions and larger scale emergencies or special events.
- PSAP agencies should move radio communication systems toward a shared standards based system. Such a migration will allow agencies to be able to open future radio purchases to multiple vendors which should result in lower costs.

**Regional Coordination Should be Enhanced**

Key multi-disciplinary staff should collaborate on a more consistent and regular basis on issues of regional significance. In the Safecom model, such collaborative efforts are called for citing that "Establishing a common governing structure for solving interoperability issues will improve the policies, processes, and procedures of any major project by enhancing communication, coordination, and cooperation; establishing guidelines and principles; and reducing any internal jurisdictional conflicts. Governance structures provide the framework in which stakeholders can collaborate and make decisions that represent a common objective. It has become increasingly clear to the emergency response community that communications interoperability cannot be solved by any one entity; achieving interoperability requires a partnership among emergency response organizations across all levels of government. As such, a governing body should consist of local, tribal, state, and Federal entities as well as representatives from all pertinent emergency response disciplines within an identified region."[3] Under governance above, GeoComm recommends establishment of working committees, and in this case, it would be beneficial for a working committee to look specifically at interoperability issues. The Governance aspect of the Interoperability Continuum for the region is relatively low and improvement in this area could benefit the region.

**Murray City Police Department Radio Communications Move to UCAN System**

As stated in the Findings Section of this report, Murray Police Department uses an 800 MHz conventional system that prevents them from communicating with other agencies if they need to leave their coverage area. Consequently, if other UCAN users respond to assist Murray City, it requires a console patch to allow direct communications. In order to enhance, regional interoperability Murray Police Department should be encouraged to convert to the UCAN.

**Improvements Related to Jointly Developed Formal SOPs Should be Considered**

The region is assessed at a minimal level relative to joint SOPs for planned events. Given the level of collaboration that GeoComm observed in the region this ranking is not surprising. However, it does provide opportunity for improvement and formal written guidelines or instructions for incident response, which typically have both operational and technical components that should be jointly developed in the region. Effort should be made to jointly established SOPs which will enable the region's emergency responders to successfully coordinate an incident response across disciplines and across jurisdictions. Clear and effective SOPs are essential for effective interoperable communications for all disciplines.

[3] http://www.safecomprogram.gov/SiteCollectionDocuments/Interoperability_Continuum_Brochure_2.pdf

# GIS

The five area PSAPs utilize GIS data for the mapping applications. The data is derived from different sources with varying degrees of synchronization accuracy. The City of Salt Lake and VECC as primary PSAPs in the area manage and control the MSAG for the region. The University of Utah uses building footprint data and city centerline as a backdrop. Their data is maintained on campus and coordinated with the construction of new campus structures.

The Data Report Card analysis of the datasets included an independent centerline analysis based on the following map data standards for public safety:

- Centerline must be broken and snapped at same grade intersections and service boundaries
- Centerline must not contain overlapping address ranges within a community

GeoComm was informed that data sharing does exist between agencies. VECC and Salt Lake County and participating local agencies within Salt Lake County share their data with the state. The state reviews the data and according to the June 2010 AGRC report updates approximately three counties per month on a statewide basis. The review of the data shows a large degree of similarity between the county, state, and VECC data sets however variations do exist. Some of these variations have a direct effect on public safety recommendations. The independent and synchronization analysis shows specific variations in the data related to overlapping ranges. Overlapping range errors in one dataset do not appear in another and vice versa (Appendix D).

The synchronization testing related to geocoding ALI database records to the street centerline provided interesting results. VECC and Salt Lake City have established maintenance procedures relating to MSAG and GIS maintenance. However, Salt Lake City had the lowest geocoding success rate of 57.7 percent. The fallout out for Salt Lake City shows that 98 percent of their errors were related to street name issues. One example is S Oak Hills Way. There appears to be two MSAG entries with the same street with two different spellings. The map data has S Oak Hills Way while the MSAG entries have S Oak Hills Way and S Oakhills Way.

The MSAG and the map data should be reviewed and synchronized based on desired street name for public safety. The large fallout related to street names was due to the street suffix abbreviation. The MSAG has an AV abbreviation while the map data is AVE. This discrepancy related to 66 percent of the 4155 issues related to street names. Similar issues exist in other datasets. The Data Report Card analysis results provide breakdown of the issue types and fallout records (Appendix D).

### Recommendations

**Preparation of data for NG9-1-1 by conducting data cleanup and review of maintenance procedures is necessary.**

This preparation can be accomplished by:

- All PSAPs should review the fallout results from the Data Report Card to determine cleanup procedures for each GIS source. If changes to the MSAG are made, those changes should be communicated to data steward performing cleanup.
- PSAPs are encouraged to establish communication processes between MSAG and GIS maintenance sources to ensure new or adjusted MSAG entries reflected in corresponding map data used in each PSAP.
- PSAPs in the region should collaborate to ensure the data is being shared and incorporated into the different datasets meet the needs for public safety. As the region moves to NG9-1-1 timeliness of map updates is critical to the health of the system.
- Incorporate NENA NG9-1-1 requirements in data sets used across region for future functionality.

## Moving Forward within the Current Structure

One of the predominant advantages that might be perceived by maintaining the status quo is that no change usually means that the problems and issues are well known and understood and to some degree have been managed at least at a low level. Optimal operations and efficiencies may not be realized, but the business of 9-1-1 is accommodated. There is often a capacity within organizations to operate with some degree of functionality despite the issues that the people of the organization deal with day in and day out. While GeoComm's primary recommendation is (Optimum Service Model, Section Six), we realize there are benefits to be realized in the interim within the current structure. However, without change to the existing conditions, little improvement to service, efficiencies or effectiveness will be realized and the principles adopted by the region will not be achieved. It is GeoComm's position that the Metro region would not be satisfied with such an outcome. The fact that this study alone has been undertaken illustrates the region's desire to advance the service offering to citizens in the area. Without implementation of any of the GeoComm recommendations within the current model, the region would find that the current issues or "findings" covered previously in this report would continue.

Highly functioning organizations are perpetually striving to increase efficiencies and find more effective ways of conducting their work. Successful organizations seek service enhancements to their constituency and put that goal above many others, if not paramount, in their processes and procedures. These successful organizations seek opportunities to improve and enhance operations at every level of the organization and within every task.

In the spirit of seeking the same outcomes for the PSAPs in the Salt Lake Metro region, GeoComm believes that the potential enhancement to service in the area can bring the region closer to highly functional if the improvement recommendations are accepted even without structural changes to the PSAP compliment. Enhancements to service if recommendations are accepted include:

- Public experiences a consistent level of service across the region
- Collaborative efforts based on equal participation and mutual acceptance of the defined goals, provides better service to the public, more effective resource management, responsible emergency planning, and avoidance of duplication of efforts and resources
- Improve relationships at the operations level between PSAPs
- An opportunity to refine SOPs and decrease the time to dispatch
- Improved management structure and supervision efficiency.
- Expanded levels of cooperation, coordination, and collaboration will best serve the public as well as diminish the stresses of continued competitiveness
- The value of effective regional emergency planning related to sustaining emergency communication services during a disaster or even a prolonged service interruption/outage, would be enhanced if each PSAP sought to better utilize additional resources and active partnerships with other PSAPs within the status quo
- Staff benefit from training program enhancements and regional training efforts; Baseline minimum training standards across all PSAPs and consistently trained personnel throughout the region
- Improved operational efficiency through training and standardized protocols
- Improvement of synchronization levels between GIS, ALI, and MSAG which will be required for NG9-1-1 migration

## Cost Impact

While there are a number of recommendations for continuing the current structure, the majority of the recommendations should have little cost impact to the PSAPs. Remaining in the current model with implementing the recommendations is simply looking at a different way of approaching the issues as a region rather than each PSAP individually and would not have a major cost impact. For example, rather than one PSAP offering their staff a training class and paying an instructor, the region could pursue a training class and share the cost.

The cost here is not necessarily monetary; it is the individual agency and PSAP staff commitment to achieving the recommendations for improvements as a region.

## Summary

The challenges that the region will face when embarking on an implementing area wide improvements may, at first, appear daunting. Some of the challenges will be easier to overcome and address than others. Mitigating or resolving the challenges, however, will continue to advance the region toward the principles of improved service, more effective governance and policy development, and a superior level of survivability and efficacy in operations.

One of the biggest challenges will be confronting and resolving the current state of lack of collaboration among the PSAPs; however, it is not beyond achievable through effective management and mitigation of this long-standing status. It is likely that a respected leader will have to emerge that can unify the policy level stakeholders who will need to take responsibility for dealing with this long-standing issue.

Finally, if the region pursues improvements through the status quo structure, there must be commitment and dedication to the Principles, while realizing that changes must occur in order to achieve the full benefits of the principles.

# 6 Optimum Service Model

## Overview

The recommended model for the Salt Lake Metro area is a configuration where a new primary Public Safety Answering Point (PSAP) incorporating the jurisdictions of the entire county, with the exception of Salt Lake City is formed under a new governance structure. This recommended model provides for the current Salt Lake Valley Emergency Communications Center (VECC) operation and the Unified Police Department (UPD) of Greater Salt Lake operation form a new single entity. For ease of reference GeoComm has named this new structure the Unified Emergency Communications Agency (UECA).

Within the recommended model, the primary PSAP at Salt Lake City remains as currently planned – a combined police and fire/Emergency Medical Services (EMS) operation serving the city limits of Salt Lake City.

The specific mission, service area and population of the other two secondary PSAPs, Utah Highway Patrol's Department of Public Safety Salt Lake Communications Center Secondary PSAP and University of Utah Department of Public Safety PSAP, justify remaining a secondary PSAP and a continued separation of responsibility by distinct PSAP services. GeoComm made this justification based on several specific aspects of the secondary operations. The University of Utah Department of Public Safety serves a population of 31,000 students and 15,000 faculty and staff with unique campus security needs and specific security issues common to a large campus population. The University property includes several large research laboratories and the University of Utah health care system and facilities. The Department of Public Safety at the University is involved in the traditional campus patrol, specialized after hours escort functions, building monitoring functions, campus-related issue investigations, sports activity patrol, and peacekeeping. This campus-specific response contributes to the unique requirements of the University of Utah Department of Public Safety PSAP.

Department of Public Safety Salt Lake Communications Center is a secondary PSAP and also serves a unique population within Salt Lake and Utah counties. In 2010, 99 percent of 9-1-1 calls received by the center were from a wireless device reporting incidents on the Utah highway system. Wireless call routing, by its nature, is not specific and cannot be precisely managed like wireline routing can; an entire cell sector of a tower must be routed to only one PSAP. In order to direct wireless calls that are destined for the Department of Public Safety Salt Lake Communications Center, because they cover the portion of the highway within the agency's response area, an entire cell sector's wireless footprint would have to be routed to the Department of Public Safety Salt Lake Communications Center. This could involve the Department of Public Safety Salt Lake Communications Center transferring back to other primary PSAPs the calls not within the Department of Public Safety Salt Lake Communications Center jurisdiction, such as

in the case of a wireless call from a home or business adjacent to the highway and within the footprint of the cell sector, reporting a fire or a theft. The confusion and unnecessary transfers required under this potential scenario would be potentially significant and are not recommended. In addition, the Department of Public Safety Salt Lake Communications Center provides dispatch services for 20 state agencies and divisions. They also must coordinate with the Salt Lake Metro region's public safety agencies—VECC, UPD, and Salt Lake City Police and Fire/EMS Departments if additional resources are required on an incident within the jurisdiction on the highway system such as a car fire or an accident with injuries. This coordination will continue in the Optimum Service Model although the complexity of that coordination would be reduced as only two other agencies would exist.

This model allows the communities in the region, outside of the City of Salt Lake, to be served by a single agency, where police, fire, and EMS dispatch services will be unified.

# Governance and Transitioning

The historical experience in this region has demonstrated that despite efforts to resolve the political, operational, and financial issues that exist within the current configuration and infrastructure, the region has not achieved full success and alignment with the Principles. It is GeoComm's finding that strategic changes to the structure and governance in areas of the region outside of the Salt Lake City will be the best approach to resolving the longstanding service issues and provide the level of service the residents of Salt Lake County require.

## Recommendations

### Appointments to the Policy Board and Policy Board Leadership

The recommended governance structure in this Optimum Service Model is one where a separate representative authority would be established as a UECA Policy Board. Salt Lake County and all municipalities, with the exception of the Salt Lake City jurisdiction, would assign or appoint appropriate representatives to a governing board responsible for policy and funding decisions. The chief law enforcement position in the county, the Salt Lake County Sheriff, should be the position of leadership as the designated chair of the UECA Policy Board. The rationale for recommending that the Sheriff be the chair of the Policy Board is two-fold. One, the position is an elected position which supports the recommendation that all members appointed to the governing board be elected officials and responsible and accountable directly to the electorate and taxpayer. The second reason for this recommendation is that as the chief law enforcement official in the county and one familiar with the needs of both the community and emergency services, the Sheriff is in the unique position of having a perspective on what is needed to oversee and manage an emergency services operation as well as the needs of responder.

**Oversight and Policy Structure**

GeoComm recommends that all members appointed to the governing board be elected officials. Policy Board level individuals should be elected officials whose responsibilities and accountability are directly linked to the electorate and taxpayer.

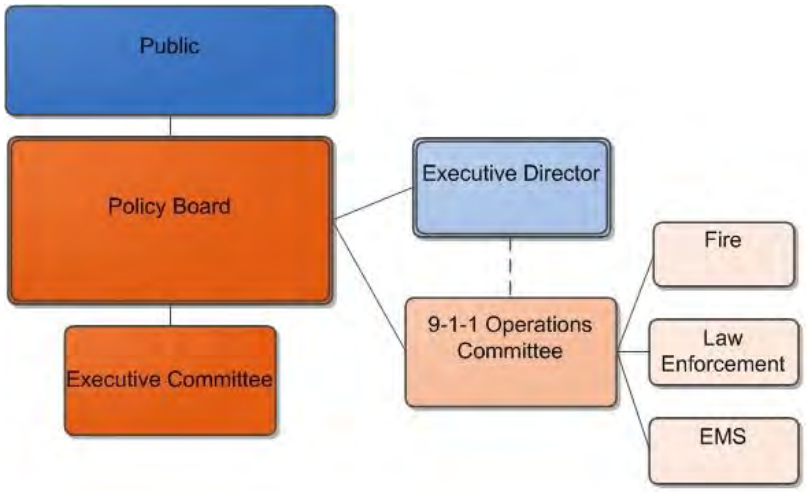
The Executive Committee is a subcommittee of the Policy Board and the first tier of analysis and discussion on issues affecting policy. The Executive Committee would be comprised of the officers, a Chair, Vice Chair, Secretary, and Treasurer, from the new PSAP Policy Board and would be elected by a majority vote of the Policy Board. Recommendations for an action affecting the region's 9-1-1 service would flow from the Executive Committee to the Policy Board. The Executive Committee would be responsible for the initial triaging of issues and recommendations. Once those issues were fully developed and sufficient information was provided in the opinion of the Executive Committee then the committee would advance the information to the Policy Board, so the Policy Board could make a sound, well founded decision.

Other committees could be developed, as necessary, such as a Transition Committee which would be ad hoc and for a defined time period and mission. The committees appointed by the Policy Board should be represented by high level user group personnel such as fire department chiefs, law enforcement agency leaders, and EMS directors who are consumers of the system and whose services are impacted by the methods and procedures determined by the Policy Board. One such essential committee is a 9-1-1 Operations Committee which would be responsible for establishing the operational guidelines for the new PSAP and for making recommendations to the Policy Board related to programs and procedures. Examples of such recommendations might be the adoption of operational standards, dispatch protocols affecting service levels to the citizens or responder groups, or call processing parameters or call answering goals.

The UECA 9-1-1 Operations Committee should have joint leadership in the positions of co-chairs. The Undersheriff should be considered as the appropriate leadership position as co-chair and the fire services should be considered for the other co-chair position of leadership. GeoComm recommends that the UFA and the other fire service agencies alternate the position of co-chair of the UECA 9-1-1 Operations Committee. One year UFA is co-chair, the next year the co-chair position would rotate to a representative of the non-UFA fire agencies selected by that group of agencies.

The UECA Executive Director is the administrative link between operations and the user committees and Policy Board. The Executive Director is responsible for the day-to-day operations of the agency and for carrying out the established mission and policies established by the Board. The Executive Director receives advice, direction, and counsel from the UECA 9-1-1 Operations Committee acting within the policies established by the Policy Board.

## UECA Governance Structure




**Support**

Additional support for financial and legal areas of the organization can be provided in a variety of ways. Outside legal counsel or accounting services can be obtained. Alternatively, a participating community may offer to provide legal or accounting services either in lieu of financial contributions to the entity or in an effort to reduce costs of the organization for all participants.

**Strategic Planning**

GeoComm finds that the Salt Lake Metro region lacks a cohesive and coordinated plan for Enhanced 9-1-1 (E9-1-1) services that encompass local needs and therefore, recommends a comprehensive strategic planning process be undertaken by the region. This strategic planning initiative should be facilitated by a professional, independent party, to alleviate the expressed concern of undue influence by any one of the existing parties.

In addition, the initiative should be inclusive and the appropriate public safety stakeholders should be invited to participate. Every effort should be made to ensure that the process is collaborative and addresses needs of the local public safety agencies, the state E9-1-1 Program, the mission of the Utah 9-1-1 Committee, and public expectations for E9-1-1 service in the region.

The strategic plan should focus on the development of a "service outline" which clarifies the roles and responsibilities of the new agency and how service to the region will be improved.

- Planning - GeoComm recommends a comprehensive planning process that will define how short-range and long-range planning is conducted, both initially and on an ongoing basis; how frequently

the strategic plan is updated; what elements should be included; and who is considered a participant or interested party.

- Governing Documents - Parameters of the Policy Board should be outlined in a Joint Powers Agreement or Interlocal Agreement. This governing document should include how decisions will be made, voting procedures, funding support sharing, budgeting approval, Board tasks and responsibilities, UECA 9-1-1 Operations Committee structure; responsibilities of the UECA staff, transition issues, and service level requirements.
- Fiscal Planning - Once the strategic plan is completed and the region has a clear vision of its future, GeoComm recommends the Policy Board discuss and determine appropriate levels of funding and support from the participating communities. The budgetary figures presented in this report are high level and represent minimum costs. Local decisions on span of control, ancillary duties assumed by the UECA, CAD systems, training, etc., will all affect the budget and transition costs. Transition is not easy and will take both effort and resolve to make sound decisions that will lead to a successful organization and operations. Decision-makers should understand that there are significant costs to transition, but that even if moderate costs savings are realized, it is the right thing to do for the service levels in the area.
- Facilities - GeoComm recommends that the new UECA be located in the facility currently owned by trustee communities of VECC.
- Asset Assignment - GeoComm further recommends that appropriate assets and liabilities be transferred to the new joint agency. This will be difficult unless all communities support the concept. The current Interlocal Agreement for VECC requires 100 percent agreement by participating jurisdictions to dissolve the organization and dispose of its assets.
- Effective Management - One of the first actions of the UECA board will be to hire a new Executive Director to manage the implementation and then the daily operations and establish the appropriate staff to carry out the mission of the newly created organization. The executive director will be accountable to the governing board and will serve as the organization's Chief Executive Officer (CEO). The executive director, in collaboration with Operation Committee(s) will be responsible for providing the board with the appropriate recommendations and supporting data to make informed policy and budget decisions. Because this is a new organization, a Transition Team should be charged with developing a job description for the new agency executive management, establishing the appropriate compensation level, and advertising the position. These actions, before implemented, would be approved by the UECA Policy Board. The Transition Team should be representative of the appropriate stakeholders and potentially additional working groups that would deal with funding, human resources, operations, and technology.
- Equipment and Facilities - GeoComm suggests that the Policy Board determine how the 9-1-1, Computer Aided Dispatch (CAD), radio and other dispatching equipment and resources from both VECC and UPD will be transferred or incorporated into the new UECA organization. As discussed in other areas of this report, the decisions revolving around CAD will impact operations and the budget as well as transition costs. There are three decision points centered on the CAD system for the new agency
  - Remain with two disparate systems for a limited amount of time
  - Decide on either the Spillman or Versaterm CAD as the only CAD for the new agency

  - Decide to replace the CAD entirely. Each of these options presents different cost and operational issues to be discussed by the Transition Team

- GeoComm recommends that if the CAD2CAD data bridge interface continues to be used during the transition period and potentially a defined, moderate period following the immediate transition until the organization is fully operational and stabilized be established but that the agency determines if they will stay with either the Spillman or Versaterm CAD or investigate a totally new CAD for the UECA operation. Continuing the use of the CAD2CAD data bridge interface through transition will reduce any perceived sense of urgency or immediate cost to force a conversion to a single CAD system during the early stages of UECA operation. The cost of conversion to a single CAD, or any subsequent data transfer to Records Management Systems (RMS systems), could occur on a planned replacement or future budgeting process basis rather than an initial start-up cost.
- Long Range Planning - GeoComm recommends that both the Policy Board and the UECA 9-1-1 Operations Committee conduct long range planning on an ongoing basis. The Policy Board will set direction and the UECA 9-1-1 Operations Committee should advise the Executive Director relative to carrying out the mission within the Principles and direction set by the Policy Board.

Just as the Utah 9-1-1 Committee should conduct a strategic planning initiative on a statewide basis, so should the region as part of its organization's formal process of identifying the direction and decision-making methods it will use to allocate its resources to pursue the desired outcomes.

In order to determine the direction of the organization, it is necessary to understand its present situation and the possible opportunities through which it can pursue the goals of the organization. A strategic planning process should end with objectives and a path to achieve them.

**Implementation Planning**

Subsequent to completion of a comprehensive strategic plan, the new UECA will need to develop an equally comprehensive Implementation Plan. The Implementation Plan will outline the specifics of a transition and will be a detailed description of how the various elements of the transition should occur including a complete timeline of sequential events. The Implementation Plan will direct processes and outcomes and will provide the necessary tactical framework for the service, personnel, equipment, and facility transition from current service to the new UECA.

A Transition Team should be established to collaboratively develop the Implementation Plan. The scope of what GeoComm was asked to do in this part of the project included a high level discussion of the general elements that would be necessary in the proposed model.

An in-depth analysis and specific cost delineation of many of the implementation elements is not possible (nor is it within the scope of this project) until the Transition Team begins to define exactly what the new organization is going to look like, how it will function, what issues will be addressed on a priority basis to name a few. Issues that will need to be considered during the implementation planning process include the following:

- Staffing - It will be important for the new organization to develop a staffing structure that will provide the proper level of management and supervision along with well-trained and competent telecommunicators. The estimates for required staff are minimum levels and only if the concept of restructuring is fully embraced. If modifications to the recommended staffing complement are made, or if protocols and procedures that were used in the staffing calculation are adjusted in any way, the budgetary estimates provided will also require adjustment by the Transition Team. The UECA can only achieved the cost savings reported if the model is adhered to. Any changes to staffing level will also change the cost/benefit calculations
- Development of a comprehensive timeline of transition events
- Determination of what equipment and technology is reusable or expandable to accommodate the projected staff and workload
- The Transition Team should carefully consider the existing disparate CAD systems used by the two communities of VECC and UPD. While it is possible to retain both systems for a brief period, that may not be in the best interest of the new agency. At the time the new agency is created, it may be appropriate to move to a new CAD. An appropriate level of funding will be necessary to purchase and implement a new CAD. Capital Improvement Plan (CIP) development information is included in the financial section of this report.
- The Transition Team should establish a reasonable operational fund balance for the new agency. Generally, agencies should retain six months of operating expense in a reserve or operational fund balance fund. In terms of the proposed operating budget this number could be near the $6,000,000 level.
- Facility rehabilitation to accommodate the projected staff, responsibilities, and workload
- Integration of the standard practices and procedures from each organization into the Standard Operating Procedures (SOPs) and training curriculum
- Staff retraining schedules to accommodate effective transition and timing
- Coordination with the 9-1-1 Service Provider to ensure efficient transition
- A comprehensive transition plan must be developed to integrate current available technology into the new operation or disposition of the existing equipment

### Legal Issues in Transition

There are a number of legal considerations that should be contemplated by the Transition Team. These include:

- Consideration of any existing contracts or leases that may need to be either renegotiated or legal documents changed to reflect the new organization name or governing structure
- Current MOUs with community public safety agencies

- New governing documents (Joint Powers Agreement, Interlocal agreement, or other appropriate documents) for the new UECA organization
- New bylaw's for the UECA organization
- Legal transition of hard assets from the current owner to the UECA as deemed appropriate by the Transition Team
- Employment contracts that may be in place for any personnel that will transfer from current organization to UECA
- Legal title to existing property
- Interlocal agreements with communities which may need to be re-written to reflect arrangements with the new organization
- State registration, as required, of the new organization
- Ensure a current audit of both entities so that all assets can be accounted for
- Taxpayer Identification Number (TIN) status application or registration with the new organization name; cancellation of any existing TIN for current entities
- Any existing labor agreements that may need to be considered
- Bank transition from existing accounts and account name to the UECA

The above list is a high level overview of what is known to exist in the region. The Transition Team may need to add to or delete from this list as the actual planning for the transition commences. There may be specific legal documents that exist that will be uncovered in the transition process.

**Define Agency Organizational Committee Structure**

As stated above, it is GeoComm's recommendation that a UECA 9-1-1 Operations Committee be established which would be responsible for collaborating on the operational guidelines for the new PSAP and for making recommendations to the Executive Director and Policy Board related to programs and procedures. Responsibilities of the UECA 9-1-1 Operations Committee should be discussed and agreed to, including how the activities of the committee will be handled, and how the business of the committee will be discussed and recommendations advanced to the Policy Board for adoption. The UECA 9-1-1 Operations Committee, consisting of public safety agency directors would be advisory to the UECA Executive Director. The 9-1-1 Operations Committee should define the standards and performance measures that will ensure the desired level service quality within the UECA organization to meet the Principles, oversee the Transition Team progress and report to the Board, resolve service discrepancies and coordinate procedures; recommend training standards for adoption by the Board and determine the appropriate transition to Next Generation 9-1-1 (NG9-1-1) service for the UECA. At a minimum, the 9-1-1 Operations Committee will initially be involved in:

- Recommendations and Standards - Absent the development of guidelines or standards by a higher level state organization, the UECA Policy Board should direct the Executive Director and the

UECA 9-1-1 Operations Committee to develop recommendations for performance, operational protocols, and training standards affecting service in the UECA service area and the Policy Board should adopt those standards.

- PSAP Criteria - Under the parameters of the Principles adopted by the agency, the UECA 9-1-1 Operations Committee should recommend to the policy board a set of goals and/or objectives outlining service requirements for the region based on the guiding service principles. Once a request is approved by the Policy Board, the Executive Director is then responsible for accomplishing the objective established. (Examples of objectives for the UECA 9-1-1 Committee might include minimum staffing criteria requirements, minimum network infrastructure requirements, minimum training requirements for call taking and dispatching staff that are consistent and meet national standards are just a few of the many goals that the committee could pursue).
- Redundancy - It will be important to work out an agreement with the Salt Lake City for fully redundant services for both communications centers. Each should provide full backup for the other. In addition, the UECA should determine a backup facility and plan for alternative operations in the event the UECA PSAP and the SLC PSAP are rendered inoperable or uninhabitable.
- Capital replacement or capital improvement planning will be essential for effective operations and should begin with collaboration between the Executive Director and the UECA 9-1-1 Operations Committee. Recommendations should be advanced to the Policy Board for action and or adoption. A five to seven year CIP would not be unreasonable and should be part of the Transition Team's responsibilities and ultimately part of the UECA budgeting process.

GeoComm understands that the move of two large regional emergency communications centers to a totally new operation and agency will present significant challenges but believes that the two fully redundant centers can best serve the citizens in the Salt Lake Metro region and most closely meets the guiding principles the region has identified for the optimum level of service they desire. Collaboration with all parties will be required to accomplish the objectives, and leadership from the elected officials in the region to work together to a common end that best serves their respective constituents.

### Utah 9-1-1 Committee Standards Development

Standards are critical to establishing and maintaining high quality and consistent 9-1-1 service. It has been demonstrated that standards, when properly established and implemented, help to ensure consistent service levels, reduce costs and risks, and improve efficiency. Ideally, standards should be developed in conjunction with the Utah 9-1-1 Committee strategic plan and guiding principles. While GeoComm understands this topic is beyond local decision-making, it is an important subject to approach for the region and the state. Development of standards will require an inclusive and collaborative effort among all the state 9-1-1 stakeholders to ensure as comprehensive and acceptable process.

GeoComm strongly recommends that the Utah 9-1-1 Committee establish standards, or, at the very least, minimum recommended guidelines that would define minimum network configuration; required 9-1-1 database and accuracy levels; and GIS accuracy levels throughout the state. Where appropriate, the Salt Lake Metro PSAP stakeholders should be involved in this process and emphasis the importance of this recommendation with state decision-makers.

# Operations

This model supports consolidation of current VECC and UPD PSAPs into a newly created joint operation covering the entire Salt Lake County jurisdiction except for the Salt Lake City. It is clear that this topic has been deliberated and considered in the past and conditional acceptance was reported. Subsequently, the VECC facility was built with sufficient space to accommodate a consolidated operation. GeoComm also learned that some current UPD agency customers were once VECC agency customers and moved to the other agency. Knowing this, it is clear that the primary challenge of these two distinct entities is the history of the relationship between the operations and the governance of the respective services. Understanding these political dynamics is crucial to effective transitional planning.

GeoComm notes that the Performance Audit of the 9-1-1 System in Salt Lake County conducted by the Office of the Utah Legislative Auditor General in November of 2009, specifically includes the consolidation of VECC and UPD as one of two options. It is also noted that a considerable amount of money (estimated $900,000) was spent to create a CAD2CAD data sharing interface between VECC and UPD. The other alternative cited in 2009 Audit Report was the assignment of primary PSAP status to UPD. GeoComm considered this option and was invited to review the UPD presentation which demonstrated the UPD view of value added features and of their desire for independent primary PSAP status. GeoComm's evaluation did not identify this model as the most beneficial for a number of reasons which are described in Section Four, Potential Model Evaluation.

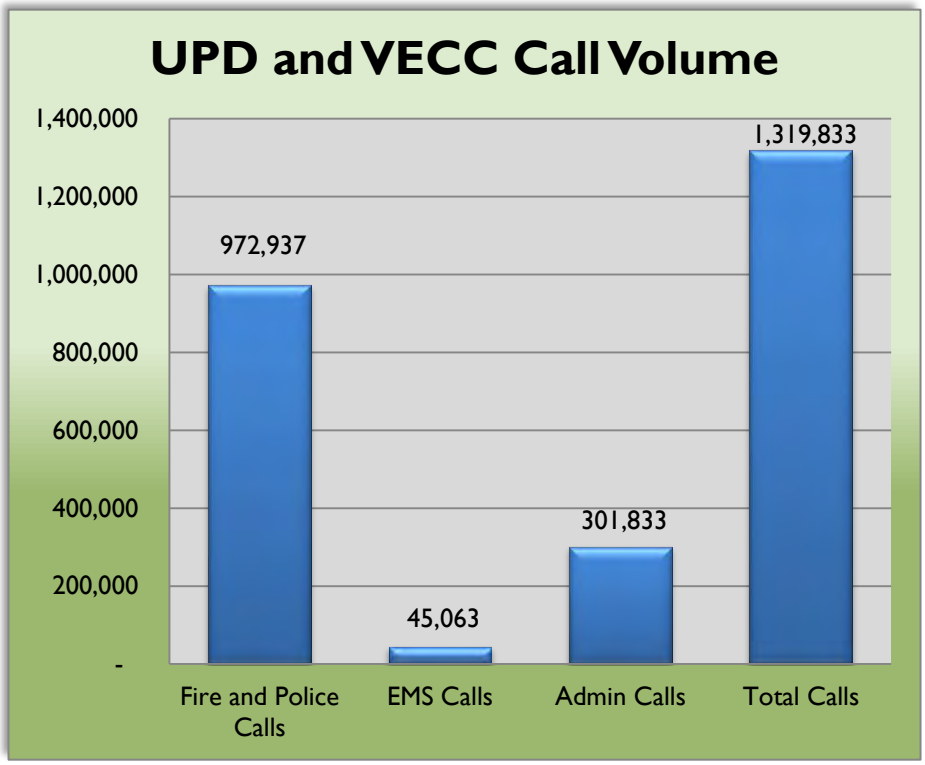
## Recommendations

Many of the findings and issues identified in the region are addressed through the GeoComm recommendations for improvement discussed in Service Improvements within Current Structure, Section Five. There are a number of other operational and fiscal issues and principles, however, which can only be properly achieved in the Optimum Service Model. Fragmented dispatch, long call processing time, inefficient use of existing facilities have only moderately successful solutions if the current structure is maintained.

The current inefficient use of resources and the cost effectiveness for the taxpayer principle can only be effectively addressed by adoption of the Optimum Service Model.

### Appropriate Operational Procedures to Handle Call Volume

Based on the data collected, the new regional UECA operation would handle over 1,318,000 calls per year. Appropriate operational procedures for UECA should be collaboratively developed among the jurisdictional stakeholders. Decisions made regarding operation will have impact on the cost of the agency operations and on the support required from member communities. The UECA will be a large and complex organization serving the entire county jurisdictional community and a combined multi-disciplined responder community. Effort should be made to be inclusive in the operational procedure development process with appropriate consideration given to all agencies equally.




### CAD Interface Decisions

As previously identified, the technology integration of dispatching UPD agency fire calls is complicated and costly both in resources and technology. In the Optimum Service Model, initially, the public safety agencies dispatched by the UECA may choose to continue operating disparate CAD systems, for which a CAD2CAD interface has been established even though they would be located in the same facility and operations would be combined. A decision of this nature may save initially on CAD replacement but would incur additional cross training expense and may impact staffing. Other options will have different cost impacts on both the transition and long-term budgeting. GeoComm has not calculated the cost of a new CAD or moving the existing CAD as these are local decisions. The impact on budget will need to be accounted for in the implementation phase if the Optimum Model is selected.

### Efficient Call Processing

In this model, the law enforcement, fire, and emergency medical resources assigned to each community are dispatched from the same facility contributing to more efficient call processing. GeoComm's recommends the initial call receipt should be processed in-house, with defined protocols for call transfer to designated dispatchers, call forward to message systems, or call referral to a more appropriate number for action.

**Abandoned Calls**

As described in Service Improvements within Current Structure, Section Five, the Salt Lake Metro area PSAP community experiences high abandoned call rates. While the specific reason is not known, some measure of investigation and analysis into the underlying cause is important to the region. This will allow the region to more effectively manage their network and operations. Every abandoned call requires action on the part of PSAP staff and can lead to squandered resources and higher operational costs. GeoComm recommends UECA initiate an investigation into the root cause of the high number of abandoned calls and develop an action plan to address the causes identified.

# Staffing

As noted in the report, GeoComm recommends the current UPD and VECC PSAPs form a new independent operation serving all public safety agencies in the county with the exception of the Salt Lake City Police and Fire Departments, the University of Utah, and the agencies currently served by the Utah Department of Public Safety. Based on projections developed using the validated 2011 call volume reported by each PSAP, this newly combined operation would be responsible for call receipt and dispatch associated with approximately 268,000 emergency calls for service received via 9-1-1 and approximately 750,000 non-emergency calls. In addition, the agency would process approximately 300,000 administrative calls. GeoComm recommends a staffing structure be adopted for the new consolidated operation that ensures effective long-term management, supervision, and staffing. It is also recommended that not all current operations be duplicated in the new agency but that conscious decisions about how the new agency will operate are made by the Transition Team and recommended to the Policy Board for adoption. Every decision to retain a current service, activity, or function has impact on both staffing and budget. If the agencies are open to doing things in a new way, a more streamlined organization is possible. Without those commitments; however, the staffing and budget proposed in this model will be impacted.

GeoComm uses a complex methodology for calculating PSAP staffing needs that incorporates several nationally accepted practices such as Erlang-C calculations and APCO's Project RETAINS supplemented by GeoComm's proprietary methodology based on decades of real-world public safety communications experience. The results of our analysis is based on a total call volume of 1,320,000, which includes all reported 9-1-1 and non-emergency calls for service along with projected administrative call volume. The Erlang-C model projects the needed number of call takers factoring in variables such as number of calls, average call duration and call-answering standards. An extensive effort was invested considering the overall impact of the initial call taker needs as determined by the Erlang-C model. The reduction in number of call taking personnel from the currently authorized in the VECC and UPD PSAPs caused motivation to carefully examine the number. While it is very common to see personnel savings in consolidated operations due to the elimination of duplicative effort, it is important to understand the factors that contribute to personnel reductions.

Under the current structure, every 9-1-1 call that is answered by UPD PSAP staff has already been answered and transferred by a primary PSAP. Therefore, a net call reduction is realized by eliminating this duplicate call answer process. Further, GeoComm conducted assessment on projected call-volume increases to ensure recommended staffing wasn't at a threshold. GeoComm is confident in the number of call taker personnel recommended.

Based on the recommended actions in the Optimum Service Model and the number of law enforcement field units, the resulting call volume and call duration factors, GeoComm finds a minimum of six full-time law enforcement dispatch positions must be staffed at all times. While the number of field units would permit a reduction of this number during some non-peak time periods, consistent public safety operations justify the minimum staffing recommendation. There are several factors that would result in additional staffing beyond this minimum number. These factors include a detailed evaluation of actual radio traffic (push-to-talk analysis or total talk time assessment) which is beyond the scope of this study and should be considered during actual staffing determination as a part of formal transition planning. Law enforcement agencies report that field units occasionally have trouble accessing an available radio channel in today's configuration. Constricting the number of channels used by area agencies would further complicate this situation. It is vitally important that the Transition Team appropriately configure the radio structure of all agencies served by the new PSAP to ensure there is no adverse impact on field unit safety. As the Transition Team determines that additional channels are needed and appropriately justified, total staffing would increase by five personnel per dispatch position added.

Further, GeoComm recommends minimum staffing include four fire dispatchers for sixteen hours per day with minimum staffing reduced to two fire dispatchers for eight hours per day. GeoComm believes that two supervisors on duty at a time can effectively supervise the size and scope of the operation being recommended.

In the public safety communications and response community, there is always a debate about span of control and the appropriate number of supervisors to call taker/dispatcher positions. In GeoComm's professional opinion and based on what we see throughout the industry, a one to ten ratio is sufficient supervision for a well-trained and efficient workforce with consistent protocols and operational procedures. Modifications to those factors, for example, agency specific protocols, will impact the ability of the organization to maintain this ratio and will affect budget and staffing.

## Recommendations

### Efficient Resource Allocation

Based on the call volume analysis, the new combined communications center should be authorized a total of 100 call taker/dispatch personnel in order to achieve the performance standard of 9-1-1 calls being answered in ten seconds or less 90 percent of the time.
This level of staffing provides for an average of nine call takers throughout the day although the actual deployment schedules must be based on peak/non-peak call trends.

### Conduct Appropriate Cross Training

GeoComm further recommends that staff be cross-trained so that any telecommunicator could adequately perform within any line-position. This level of cross training is most staff efficient.

Based on required staffing and net available work hours, GeoComm recommends ten authorized shift supervisors for the new agency along with 100 non-supervisory line personnel. While the actual staffing calculations only require 91 call taking personnel, GeoComm has increased that by ten percent to ensure that sufficient staffing was provided, especially in the transition phase. GeoComm is confident that through further attrition the UECA could realize even greater staffing efficiencies and ultimately reduce its staffing compliment to 91 if call volumes follow projected trends.

### Salary and Benefit Analysis

The chart on the following page represents current authorized staffing levels of the existing PSAPs and the proposed staffing level for the new entity.

The proposed Optimum Service Model is expected to operate with a total combined reduction of 72 positions and over $1.8 million in salary savings (management and PSAP staff combined).

| Staffing | VECC | UPD | Combined | Proposed | | Savings |
|---|---|---|---|---|---|---|
| Director | 1 | 0 | 1 | 1 | $ | - |
| Deputy Director | 0 | 0 | 0 | 1 | $ | (62,500) |
| Manager | 4 | 1 | 5 | 3 | $ | 109,400 |
| EOC Coordinator | 1 | 0 | 1 | 1 | $ | - |
| Training Coordinator | 1 | 1 | 2 | 1 | $ | 54,700 |
| Technical Staff | 4 | 0 | 4 | 4 | $ | - |
| QA/PIO | 1 | 0 | 1 | 1 | $ | - |
| MSAG Coordinator | 1 | 0 | 1 | 1 | $ | - |
| Administrative Assistant | 1 | 0 | 1 | 1 | $ | - |
| **Total** | **14** | **2** | **16** | **14** | **$** | **101,600** |

| Staffing | VECC | UPD | Combined | Proposed | | Savings |
|---|---|---|---|---|---|---|
| Supervisor | 11 | 6 | 17 | 10 | $ | 262,315 |
| Full-time Dispatcher/Call Taker | 95 | 55 | 150 | 100 | $ | 1,341,147 |
| Part-time Dispatcher/Call Taker | 15 | 0 | 15 | 0 | $ | 99,750 |
| **Total** | **121** | **61** | **182** | **110** | **$** | **1,703,212** |
| | | | | | | |
| **Total Savings** | | | | | **$** | **1,804,812** |

While most participating PSAPs were unable to separate benefits percentages, it is anticipated that additional cost-savings from the staff reductions would be significant. GeoComm utilized 30 percent of compensation to determine the cost of employee benefits. This percentage is a conservative estimate based on a recently published 2011 study completed by the Bureau of Labor Statistics. This amount should be adjusted based on Transition Team decisions and Policy Board approval.

GeoComm recommends that the Transition Team be involved in establishing an appropriate salary and benefit package for employees of the UECA. The group will need to address how to best evaluate, interview, and transition existing staff that may become part of the new organization.

Consideration should be given to how those individuals who will transition to the new organization will be treated with regard to salary. Salary levels are often the most contentious element of transition and care should be taken to attempt to not "harm" any employee as it relates to salary in the new structure. The Transition Team should expect to review GeoComm developed budgets and staffing plans, the existing salary schedules, compensation plans, performance plans, and benefit packages to ensure compatibility and fairness.

The Transition Team will need to determine how the UECA will treat existing employees of the two organizations as it relates to the transition and how to effectively reduce staff. Some reductions will be possible through the normal attrition process, or those who choose to retire or leave voluntarily rather than relocate. A comprehensive plan for equitable treatment of employees affected by the adoption of a new entity will be necessary. Engaging staff representation in the planning and transition process is encouraged.

## Ancillary Duties Evaluation

As noted above, the staffing assessment is based on processing 9-1-1 and non-emergency calls and dispatching calls to appropriate field responders along with the corresponding support activity. If ancillary duties beyond call taking and dispatching are assigned to the PSAP, the impact on staffing must be assessed in addition to these core duties. GeoComm recommends that as a part of the UECA implementation plan, each agency transition only those ancillary duties currently performed by PSAP staff that are essential to the core call taking and dispatch function of 9-1-1 service to the communities.

There are many functions being performed by the PSAP personnel in each center that will need to be reassigned, modified, or eliminated upon full consolidation. While some of the ancillary duties identified in the current operations could be assimilated into the UECA with proper training on community policies, procedures, and resources – additional staffing or duty reassignment may be required. If duties beyond those associated with call taking or dispatching functions are expected and required of the new agency, additional staff required to handle those duties will need to be added into the staffing complement and the budget recalculated. These are local decisions and some duties may not be appropriate to transition to the new operation.

The Transition Team should work collaboratively to examine ancillary duties and determine what duties have a reasonable alternative solution that either remain with the current agency in some other form or could be handled by one agency through interagency agreement(s).

The Transition Team should expect that some functions will remain as actions of call taking and dispatch. Just a few examples include:

- Response to National Crime Information Center (NCIC) and National Law Enforcement Telecommunications System (NLETS) query
- Processing warrant inquiries
- Active wanted and other criminal process checks (protective orders, restraining orders)
- Participation in emergency notification via authorized city, county, and statewide programs

When determining the staffing level of the UECA, GeoComm did utilize call volume numbers beyond 9-1-1, so there will be some flexibility for the UECA to be responsible for some of the ancillary duties currently handled by VECC and UPD.

# Facilities

GeoComm wishes to be perfectly clear in our recommendation – this is a recommendation for a totally new operation and the recommendation to consider locating the new operation in the current VECC structure should not be construed as UPD merging with or being taken over by VECC. The creation of UECA does not necessarily require new facility construction.

The benefit of the PSAP location at 5360 South Ridge Village Drive, West Valley City, Utah is the immediate availability of undesignated space within the communications operations area, the locally-developed alternate routing plans, adequate board meeting space, adequate administrative office space, revenue from a tenant, and additional room to expand.

## Recommendations

### Facility Evaluation by Transition Team

The South Ridge Village Drive location should be carefully evaluated for suitability and functionality for the combined staff and operational requirements of UECA needs. As part of the transition planning process the newly formed UECA Transition Team should conduct a full analysis of the South Ridge Village Drive location for the purpose of the merging staff, operations, and hazard considerations. The Transition Team should develop the specifics including integration of additional workstations if required, placement of back room equipment, technology integration, transition schedule, etc.

### Asset Transfer

Ownership of the facility and assets of the VECC and UPD PSAPs will have to be transitioned to the UECA. The UECA Policy Board should consult legal counsel and appropriate accounting personnel to adequately evaluate and determined the current value of equipment and facility, and to understand the required legal process to transfer assets of an organization to the new UECA. Documentation should be managed so that in the future the transactions that occurred due to the creation of the UECA are appropriately captured in the official record.

The reduction in facility costs, equipment, and CAD interface and maintenance should not be overlooked.

# Redundancy, Diversity, and Continuity of Operations Planning

The levels of redundancy and diversity as prescribed by standards and best practices currently remains elusive for the study PSAPs. GeoComm has found incomplete COOP documentation, acknowledging that some documents may not have been submitted by all PSAPs as requested. In some cases these emergency plans are blended into other functions and are not regionally-specific to the existing area emergency network or 9-1-1 specific access, duties, and recovery. Linking individual PSAP redundancy/diversity/COOP activity to other layers of emergency response creates a burden to assure that any supporting role is maintained by the partner agencies/providers. The value of a distinct COOP effort includes the retention of the responsibility to manage it. Of course, a PSAP may determine that that shared "ownership" is preferred – which is an option, as long as the associated risk is understood and accepted.

Salt Lake City Police Department, VECC, and UPD currently have some access to a variety of separate facility/services to limit system wide failure. It is also not clear if SOPs exists to support these actions and plans. In addition, no indication of regional exercises or regional, multi-disciplinary post-exercise review has been discovered.

In this Optimum Service Model, the new Salt Lake City PSAP building and the UECA facility could serve each other as alternate service locations during an outage or impaired service scenario. The two smaller secondary PSAPs could also be relocated to one of these sites to conduct basic services if their current PSAPs could not be accessed.

Historically, state and local governments/jurisdictions have always prepared, to the greatest extent possible and within the resources available, to respond to all disasters and emergencies within their jurisdictions.

However, over the past two decades, state and local governments and public safety jurisdictions have become increasingly aware of the extent to which disasters and emergencies can interrupt, paralyze, disrupt, and/or destroy capabilities to preserve critical government institutions and perform essential governmental functions effectively under emergency conditions.

The Federal Emergency Management Agency (FEMA) U.S. Department of Homeland Security (DHS) defines Continuity of Operations as is an effort within individual executive departments and agencies to ensure that Primary Mission Essential Functions (PMEFs) continue to be performed during a wide range of emergencies, including localized acts of nature, accidents and technological or attack-related emergencies.[1]

[1] National Security Presidential Directive-51/Homeland Security Presidential Directive-20 (NSPD-51/HSPD-20) and the National Continuity Policy Implementation Plan (NCPIP)

COOP planning is designed to develop and maintain a plan that enables each level of government and jurisdiction within it to preserve, maintain, and/or reconstitute its capability to function effectively in the event of the threat or occurrence of any disaster or emergency that could potentially disrupt government/jurisdiction operations and services.

## Recommendations

GeoComm recommends that COOP planning be one of the first tasks assigned to the staff with oversight by the UECA 9-1-1 Operations Committee to ensure a particular emphasis on a regional planning perspective.

GeoComm recommends formalized agreements between agencies for short-term and long-term backup needs. Formalize agreements for backup and alternate routing between UECA and Salt Lake City Police Department PSAP should be developed for short-term and long-term outages, service interruptions, or inability to access a PSAP facility and relocation of staff and calls is needed. Expectations of the UECA and the Salt Lake City Police Department PSAP should be documented, as well as the conditions under which the two PSAPs might use the other for backup or alternate operations.

### Investigate Dual Selective Router Opportunities

A single selective router serving the 9-1-1 needs of a region without an alternate means to transmit the crucial location data to the PSAP during periods of failure, creates another point of potential vulnerability in the network and increases risk.

As the integration of the planned Internet Protocol (IP) 9-1-1 network continues in Utah, the opportunity for greater interconnectivity between the two selective routers in the state can be explored. The current deployment of the selective routing feature, recognized as an integral part of Enhanced 9-1-1 (E9-1-1) service, leaves opportunity to make improvements in the NG9-1-1 environment. The expanded network should provide the capability of inter-tandem connectivity among the locations served by these selective routers.

As described in Section Five, "Service Improvements within Current Structure," GeoComm recommends that the Utah 9-1-1 Committee consider pursuing a cost study evaluation to determine if the current rates in Utah tariffs for this service are reflective of the current environment. GeoComm was informed that the reason the Utah 9-1-1 Committee has not approved the Salt Lake Metro PSAPs to be connected to the second selective router in the southern part of the state was that mileage charges were excessive and cost prohibitive. In today's improved technology environment it may be possible that the existing tariff rate is not accurately representative of current costs and because of that, the cost model should be modified. If that proves to be the case and costs are reduced, the Utah 9-1-1 Committee, or the region, may elect to reconsider its decision in light of additional financial information.

**Implement Telecommunications Service Priority[2]**

Telecommunications Service Priority (TSP) is a Federal Communications Commission (FCC) program that contracts with the local telecommunications service provider (wireline and wireless 9-1-1 service providers,) to give preference to restoration of critical service to users enrolled in the program. This service applies to the addition of new lines/service or the restoral of current infrastructure following disruption in service regardless of the cause.

In times of significant service outage, and without TSP in place, the 9-1-1 public safety community will find itself in competition with the banking industry, the health care industry, the food service industry, and the like for communications restoration service. The FCC has established the rules and policies for the TSP program; the National Communications System, a part of the U.S. Department of Homeland Security, manages the TSP program.

Because 9-1-1 services are critical to local and national security and emergency preparedness functions, reliability and continual service is essential to mitigate risk. The TSP program allows public safety entities to register the critical communication lines in the PSAP and acts as a type of insurance which requires, by FCC regulation, the telecommunication service provider to restore the enrolled line(s) before it is permitted to service or restore any non-TSP customers.
The program is most beneficial during a major disaster or attack in which the telecommunications infrastructure in an area is damaged and the public is most at risk. In these circumstances, telecommunication service providers' restoration crews are often over extended and only those customers enrolled in the TSP program will have their service issues addressed in a timely manner.

Within the program, there are five priority levels. National security holds the highest priority level, but local public safety such as 9-1-1 and police, fire, and EMS services qualify for level three priority. If an agency does not enroll its critical circuits in the TSP program, the telecommunications provider is obligated to restore all registered priority level customers in levels one through five before restoring 9-1-1 service. A federal sponsor is required; for 9-1-1, the FCC is the sponsor. There is a telecommunications provider cost to the TSP which is regulated by tariff. The FCC reports that typically, one-time enrollment fees are approximately $100 per circuit and monthly recurring fees per line average $3.

GeoComm recommends that due to the vulnerabilities in the region the UECA should initiate an investigation into the costs and process required to implement TSP for the new agency. This cost may meet the requirements of the Utah 9-1-1 Committee grant program or it may be a reasonable discussion to have with the Utah 9-1-1 Committee to undertake statewide for the primary PSAPs.

[2] http://transition.fcc.gov/pshs/emergency/priorityservices.html

# Training

GeoComm noted in the Service Improvements through the Current Structure, Section Five, that although there are documented training programs at each PSAP, there are varied approaches to training in terms of content delivery, length of training, performance evaluation mechanisms, as well as disparity in training for trainers.

Training programs do not appear to have been evaluated for alignment with nationally recognized telecommunicator training standards. If the region adopts the Optimum Service Model, this area of concern should be addressed as well.

There are significant advantages to be gained in regards to adopting minimum training standards, establishing standardized and consistent call processing protocols, and enhancing the skills of and maximizing the expertise of a professionally trained instructor cadre across the region.

## Recommendations

GeoComm recognizes that the recommendations contained below have already been discussed at length in the Current Structure Improvements section. They are important considerations regardless of the model adopted by the region and therefore, worthy of consideration in the Optimum Service Model as well. They directly address the principle of staff competency.

### State and Federal Training Mandates

PSAPs should fully comply with all training mandates as required by state and federal law. These mandated training topics including State of Utah Basic Public Safety Dispatcher Training Program; State of Utah Bureau of Criminal Identification (BCI) Training; Emergency Medical Dispatch Training; and ADA/TTY Training (initial and in service.)

For the Optimum Service Model, it will be critical to evaluate each member of the transitioned staff for compliance with these mandates and to ensure that each retained PSAP employee has successfully completed these same baseline levels of training. Specific planning will be required to complete this critical training prior to the design, development, and implementation of the comprehensive training necessary to transition all employees to the new PSAP operational protocols.

### Comprehensive Training Audit

UECA should conduct a comprehensive training audit of the current VECC and UPD training programs to evaluate consistent links between job descriptions/duties, essential job functions, hiring standards, performance expectations and training outcomes to specific elements of the internal training program.

The Transition Team, or an assigned subcommittee/workgroup, will be responsible for merging the two agency training programs or starting anew with essential elements of each agency. This audit should be conducted for each position in the organization.

A training audit will be of significant value to determine personnel structure, minimum job requirements, job duties, training standards, and performance expectations as the new PSAP is created from UPD and VECC.

**Professional Instructor Training**

The new UECA PSAP should provide appropriate levels of instructor training for various types of training being provided. The skills sets for on-the-job trainers differ from skills sets needed to present classroom training and develop training curriculum. Each trainer position requires their own level of professional training to ensure trainers are effective at providing learning opportunities for trainees.

On-the-job trainers should be trained in a professional Communication Training Officer (CTO) course and the agency training program should be based on formal CTO program concepts. This is true in the current environment as well as the newly formed UECA organization.

UECA classroom trainers and training developers should be trained in instructional design and delivery concepts based on the Instructional Systems Design (ISD) model.

With the establishment of the UECA, the management will need to identify and select one standardized CTO program. Then, prior to the merger taking effect, all current UPD or VECC trainers must be trained to the selected CTO program in preparation for the necessary transitional training for PSAP personnel from the two separate PSAPs into the new PSAP.

All personnel who will be assigned to coordinate and supervise the CTO program and CTO trainers should each be trained to the industry's minimum standards for the training coordination/management, curriculum development, and course delivery regardless for which previous PSAP they were employed.

Beyond the UECA, a regional approach to building a professionally trained cadre of instructors could result in cost efficiencies related to instructor training costs as well as direct training delivery courses for all PSAPs of the region. Clearly, duplication of training programs requiring PSAP resources are reduced through regional efforts. For example, if multiple PSAPs chose the same CTO program, instructors could deliver the CTO training for trainers on a regional level saving the cost of sending one or two people at a time to a private vendor training course. This approach also sets the stage for establishing a regional standard of care through the establishment of standardized protocols across all PSAPs.

**APCO Minimum Training Standards for Public Safety Telecommunicators**

The UECA should comply with APCO ANS 3.103.1-2010: Minimum Training Standards for Public Safety Telecommunicators. This is a nationally recognized minimum training standard for both new and veteran Public Safety Telecommunicators. Agencies are encouraged to submit their training program for evaluation of their program's compliance to this standard.

Pursuing a regional approach to training would also be advantageous in obtaining this recognition and increasing the regional standard of care. Specific to the new UECA operation, a transitional training program for all telecommunicators must be established and all personnel assigned to the new PSAP will need to be trained on the new agency's operational protocols. Since this will be a new training programs designed specifically for UECA, the APCO ANS 3.103.1-2010: Minimum Training Standards for Public Safety Telecommunicators should be used as the basis for the training program and augmented by the specific needs of the new PSAP.

Supervisory personnel will also need to receive training on any new PSAPs human resources policies, procedures, and guidelines.

A standardized Quality Assurance/Quality Improvement (QA/QI) program will need to be selected and all QI Evaluators will need to be trained on the expectations of the new PSAP.

## Technology

There are many technological advantages to merging the current VECC and UPD operations into a new consolidated, independent agency. The primary advantage is the elimination of excessively redundant equipment and systems resulting in the most efficient method of supporting an effective dispatch of services to citizens and visitors in the area.

Within the Optimum Service Model, most of the issues addressed within the current structure environment remain and must be addressed. It is evident to GeoComm, however, that the current VECC and UPD operations have adequate communications technology in place to effectively meet its public safety communications responsibilities and to provide effective communications support to field operations in the Optimum Service Model as well. The current VECC operation answers all 9-1-1 calls for UPD dispatched agencies so it is not anticipated that additional telephony equipment would be needed for a merged operation. Further, an analysis of the field unit to dispatcher ratio standards indicate that there is more than sufficient radio equipment existing today between the two PSAPs.

### Recommendation

**Transition to a Single CAD Platform**

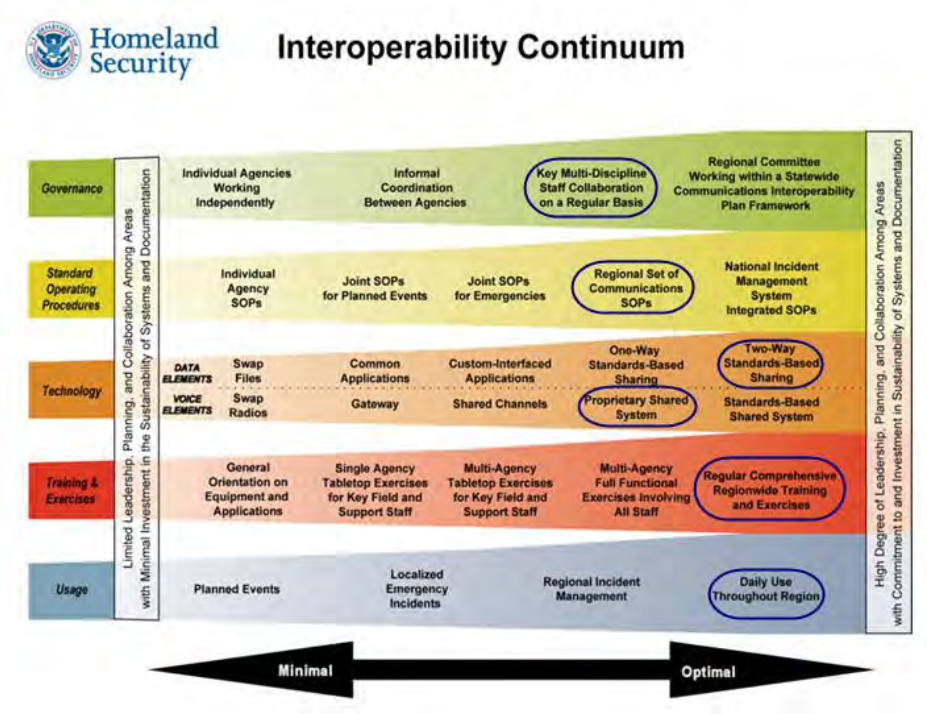
GeoComm recommends that the UECA transition to a single CAD platform that will most efficiently and effectively serve all of the public safety agencies. The speed at which the agency moves to a single CAD system will be driven by the transition and implementation timeline and budgetary considerations. As discussed under the operational recommendations, transition to a single CAD will be a significant undertaking and may need to be phased in over time as the new operation is stabilized, the benefits outweigh the cost and effort. A single CAD platform will result in a more efficient and effective 9-1-1 operation. Call takers and dispatchers can be effectively trained as well as the appropriate support personnel. The new operation will be a larger customer to the chosen manufacturer and will have a stronger voice in customizing features and functionality for local need. In addition, maintenance costs will be less than operating two disparate systems.

A major consideration in the transition to a single CAD platform will be the requirement that the disparate RMS used by the various public safety agencies is able to receive data electronically from the dispatch system. With standard data exchange protocols this functionality has become more commonplace and less expensive to implement.

GeoComm recommends the establishment of a technical transition subcommittee to examine the issues impacting the various technologies to be deployed at the new operation. This technical transition subcommittee would work closely with the Transition Committee and should be charged with development of recommendations for radio, telephones, CAD, RMS, and other technology used to support public safety in the Salt Lake City Metro region to ensure that the goal of a well-coordinated regional system is met.

## Interoperability

DHS has developed an Interoperability Continuum chart as a tool for evaluating the status of emergency communications in an area and direction on how to improve emergency response communications and interoperability. The chart identifies five critical elements to achieve the best interoperability solution. These elements are governance, SOPs, technology, training and exercises, and usage of interoperable communications. The Salt Lake Metro region should use the Interoperability Continuum to evaluate status of interoperable communications in the region and to track progress in strengthening interoperable communications across the area. The chart on the following page reflects the operating environment possible in the region if this Optimum Service Model is implemented.




## Recommendations

Information presented in the Current Structure discussion, Section Five, is applicable under this Optimum Service Model as well. These recommendations include:

- The region's PSAPs should have the regional Tactical Interoperable Communications Plan (TICP) readily available. Appropriate PSAP personnel should be familiar with the TICP.
- Regular communications training sessions addressing the current and changing operational environment should be conducted. Regular training and exercising will improve the ability to interoperate both under routine service conditions and larger scale emergencies or special events.
- PSAP agencies should move radio communication systems toward a shared standards based system. Such a migration will allow agencies to be able to open future radio purchases to multiple vendors which should result in lower costs.
- Murray City Police Department should be encouraged to move their radio communications to the UCAN system for greater regional interoperability.

# GIS

The five PSAPs utilize GIS data for the mapping applications from different sources with varying degrees of synchronization accuracy. Since some data sharing exists between the different agencies, and it is important to approach the analysis results as a region. Within the current structure, regional coordination efforts for MSAG and GIS data maintenance are important since GIS has a critical role in enhancing a public safety response by identifying a database error prior to a 9-1-1 call being misrouted. It additional the regional coordination efforts within the current structure are necessary since GIS data will have a critical role in 9-1-1 as the region moves to NG9-1-1.

The process for the independent and synchronization testing and current GIS status has been discussed in the Current Structure with Improvements, Section Five, and the GIS Data Report Card Results and Analysis, Appendix D. It is important to note that review of the Data Report Card results should be completed independent of the selected model. The issues outlined in the report effect the region as a whole and should be treated as such.

## Recommendations

The recommendations for GIS data used in the PSAPs is not dependent model discussion and have also been discussed in the Current Structure with Improvements model as well as Appendix D. Based on the results of the site visits and analysis, GeoComm believes there are four areas that the region should address.

### Develop a Data Cleanup Plan

As suggested previously, the first recommendation is a careful review of the Data Report Card results. The perception that the current data meets the needs of the PSAPs does not correlate for use in NG9-1-1 following NENA guidelines. The Data Report Card results show existing gaps in the five different data sources and maintenance programs. As soon as possible the region should develop a data cleanup plan to bring existing data up to public safety standards. The analysis results show that synchronization variation between the MSAG and GIS data. The detailed records should be reviewed to determine if the MSAG or GIS data is in error. If changes to MSAG are made at Salt Lake City or VECC, those changes should be communicated to data steward performing cleanup in a timely manner either through sharing adjusted GIS data or MSAG changes.

### Minimize Data Sources

The second recommendation is significant enough to repeat: reduce the number of GIS data sources being used in the PSAPs or review current sharing processes. GeoComm was informed that GIS data sharing does exist between the different data stewards.

However, the analysis results show existing data errors vary between different data sets. The jurisdictions should review reported errors to understand why data sets vary in the base street name and address range attributes that were tested. Differing data sources require multiple maintenance and cleanup programs. Focusing data cleanup on a reduced number of data sets with or without data sharing will streamline the costs and provide funds for data enhancement to bring the data up to NG9-1-1 standards and develop individual PSAP requirements. There are two CAD systems that utilize data and the same mapping application in all PSAPs, development of data that will meet these requirements would be minimal. Minimizing data sources benefit mutual aid scenarios by providing continuity between the regions PSAPs.

**Develop Regional Data Maintenance Workflow**

The third recommendation is the development of a regional data maintenance workflow that includes MSAG change communication or understanding how data is incorporated based on data sharing between the agencies maintaining the MSAG and GIS data. Turnaround time for incorporating changes is critical in NG9-1-1. Incorporating data changes monthly or quarterly will not meet NG9-1-1 recommendations. Discrepancy reports created in NG9-1-1 functions will require short resolution times and should be accounted for in the regions maintenance program.

In addition for UECA, a review of current GIS maintenance programs at VECC and UPD will need to be conducted to determine an appropriate maintenance program that will meet the needs of the UECA. Synchronization between the MSAG and GIS data must be developed and maintained to ensure the highest level of functionality for the dispatchers.

The region must define communication processes between MSAG and GIS maintenance sources to ensure new or adjusted MSAG entries reflected in corresponding map data used in the secondary PSAPs and shared with the State. In addition, GeoComm recommends consideration of using a single GIS data set for all the county PSAPs, as well as review of data sharing agreements and maintenance costs to ensure more continuity between the data sets being used within the primary and secondary PSAPs.

**Incorporate NENA NG9-1-1 Requirements in the Data Sets Used Across Region for Future Functionality**

With the added functionality of GIS data in a NG9-1-1 system, new GIS data models are necessary. NENA is working on finalizing those requirements. When the documentation is released the region should develop an enhancement plan that serves all the needs of the region for NG9-1-1. The required data layers are service boundaries, including PSAP boundaries, and locational data.

Street centerline is commonly used for the base location data however; NENA recommends the development of address point data. According to AGRC's June 10, 2010 report the development of a point-based location is in the initial planning stages.

# Moving Forward with the Optimum Service Model

The advantage of the Optimum Service Model is that it meets the Principles of 9-1-1 Service Delivery defined and validated by the Salt Lake Metro PSAPs and reported to the Utah 9-1-1 Committee. The Optimum Service Model allows change to the existing conditions through improvement to service, fiscal and governance responsibility, and realization of efficiencies or effectiveness.

Through this model, the region will achieve the Principles of Effective Service to the Public:

**Principle 1: The Salt Lake Metro region is best served by a PSAP model that results in the least amount of time between call receipt and dispatch readiness.**

- Reduces call processing delays by eliminating transfers for the UPD communities for law enforcement dispatch. UPD communities would receive the same dispatching service for both fire and law enforcement equalizing services throughout the county. Issues identified and reported relating to disparate dispatch centers for fire and police within the same community are resolved in this model.

**Principle 2: The Salt Lake Metro region is best served when the cost to taxpayers is equitable and fair.**

- Unifies service offering to the citizens in a single "county-based" operation and preserves the city operation within its own jurisdictional boundaries. Service to the citizens of the county outside of the Salt Lake City are centralized in one operation. This results in improved utilization of resources, technology, and facility and elimination of duplicative services and technology thereby eliminated costs.
- Considerable cost-savings realized through more efficient use of staff resources, streamlined management and elimination of excessive equipment.

**Principle 3: The Salt Lake Metro region is best served when the 9-1-1 service is sustainable.**

- Reduced number failure points thus making the system potentially more reliable and easier to isolate problems.
- Establishes and regionalizes strategic planning, long-term equipment planning, and transition planning efforts.

**Principle 4: The Salt Lake Metro region is best served when there is a high level of PSAP personnel competency.**

- Standardized and consistent baseline training for all PSAP personnel.
- Revision of training programs for compliance with agency policy, procedures, and training expectations.

- Complies with specific industry standards on training telecommunicators.

**Principle 5: The Salt Lake Metro region is best served when the 9-1-1 service and operations have a high degree of survivability.**

- Establishes appropriate plans and strengthens backup options between the UECA, Salt Lake Police Department PSAP, University of Utah Department of Public Safety PSAP, and Department of Public Safety Salt Lake Communications Center.
- Provides opportunity for fully redundant communications centers with Salt Lake City Police Department and UECA.

**Principle 6: The Salt Lake Metro region is best served when appropriate protocols and technology are in place to ensure the most effective dispatch response regardless of situation or location.**

- The CAD2CAD bridge is ultimately no longer necessary in this model. In addition to the operational enhancements of a single CAD platform, the cost of maintaining the bridge would eventually be eliminated resulting in cost-savings to the communities.
- UECA operation would result in more efficient and effective technology utilization and personnel functionality, make it easier to upgrade radio dispatch console technology, and offer costs-savings to the participating governments.
- The UECA would maintain one emergency power and UPS system to keep the center operational. This more efficient use of technology also results in cost-savings for the jurisdiction.
- Responding police and fire agencies would be dispatched by a unified PSAP improving coordination between multiple agencies during large scale events.

**Principle 7: The Salt Lake Metro region is best served when it has a governance model that ensures the citizen expected standard of care is implemented.**

- Governance model that ensures citizen expectations regarding service, stakeholder involvement in decision-making, cost effectiveness that is fair and equitable cost distribution, and management in place to ensure faithfulness to the principles held by the community.

**Principle 8: The Salt Lake Metro region is best served when there is stakeholder involvement in decision-making to ensure citizen expected standard of care is attained.**

- Unifies the governing boards to a single purpose and resolves 9-1-1 surcharge funding issues.
- Does not disrupt the consolidation efforts already underway with Salt Lake City Police Department and Fire Department.

**Principle 9: The Salt Lake Metro region is best served when there is effective public safety communications management in place to ensure faithfulness to the principles held by the community.**

- Reduces duplicate administrative and management staffing. The joining of public safety communication resources offers the new entity the opportunity to review staff assignments, maximizing the efficiency and effectiveness of current staff skill sets, knowledge, and direct service delivery experience.
- Executive management will be accountable to a single governing board representative of all member jurisdictions. A single management structure within UECA will provide consistent service to all users. User committees can meet on a regular basis with management to assess services and plan for service improvements that positively impact the entire county.

## Cost Impact

While there are a number of recommendations for this model that have a financial impact, GeoComm has chosen to address the financial impact of recommendations as a whole and the information is covered in Section Seven, Financial Recommendations.

## Summary

While the issues that the region will face when embarking on a transition to the Optimum Service Model will seem extremely challenging at times, GeoComm urges stakeholders to look past those issues in order to improve public safety service in the region and achieve service delivery consistent with the guiding Principles.

Similar to working toward improvements in the current structure, the biggest challenges will be confronting and resolving the current state of distrust among the PSAPs; however, it is achievable through coordination, cooperation, and regionalization efforts. The additional hurdle of this model will be overcoming resistance within the local communities to transition to a new organization. GeoComm understands it will take significant effort by all communities that participate for it to be successful. There will likely be political challenges at the local level as the transition becomes a political "hot" topic.

Some will perceive this model as an erosion of their power, too time intensive, or disruptive to current service; however, the result will be a 9-1-1 model that meets industry standards, provides a streamlined service to the community, and achieves the Principles.

GeoComm realizes that transition to the UECA and a more regionalized and collaborative 9-1-1 environment across the region will require significant planning and will not happen overnight. However, this report lays the foundation for transition and implementation to an improved regional 9-1-1 system.

# 7 Financial Recommendations

## Overview

Public funding for government services requires careful attention to both the accounting and the decisions related to appropriate service levels to ensure public trust and fulfill the essential function of responsible government. Several of the guiding principles speak directly to this goal by seeking cost models that are both fair and equitable and provide funding mechanisms for sustainable systems to meet the standard of care expected and demanded in the region.

In the Findings Section, GeoComm detailed that the changes to the 9-1-1 service fees over time has caused fund depletion. Initially, the 9-1-1 surcharge fee was reserved for the provision of 9-1-1 equipment, services, and call taking. A 2010 amendment to the statute now allows for the 9-1-1 service fee to be used for dispatch services as well. This has created an issue for communities that use both primary Public Safety Answering Point (PSAP) and secondary PSAP dispatch services. For example, the 1988 "Amended and Revised Interlocal Cooperation Agreement" between the primary PSAP known as Salt Lake Valley Emergency Communications Center (VECC) and member cities requires all 9-1-1 assessments from telephone users to be sent to the primary PSAP:[1]

> "PSAP/E-911. The Center shall determine the 911 assessments for the telephone users within the Members' jurisdictions, which the Members hereby agree to assess. The Center shall assess all telephone users within the jurisdiction of its Members the same rate for 911 service. The Members shall pay to the Center those 911 monies received from Mountain Bell or its successor plus interest accrued thereon, which the Members shall hold in trust for the Center. The Board of Trustees shall apply said payments to the PSAP/E-911 services of the Center and the overhead allocated thereto. The Members shall not be assessed additional amounts for PSAP/E-911 service or overhead by the Center."

It is also important to note that the Unified Police Department (UPD) of Greater Salt Lake secondary PSAP receives 9-1-1 surcharge revenue from telephone users in the unincorporated area of Salt Lake County.

[1] 1988 Amended and Revised Interlocal Cooperation Agreement, Paragraph 11.

Those funds are used to subsidize the communications budget of UPD even though it is a secondary PSAP with 9-1-1 calls being initially answered at the primary PSAP. This accounts for approximately $500,000 in 9-1-1 surcharge distribution.

The 2010 change to allow 9-1-1 surcharge funds to be used for operations has obfuscated the picture of the cost of 9-1-1 in the area and has raised serious concerns about the health of contingency funds for some of the PSAPs in the Salt Lake Metro region.

The concern expressed by stakeholders in the region is that the use of 9-1-1 surcharge funds for operations, while legally appropriate, continues to deplete the 9-1-1 revenues distributed to the PSAP at an unusual pace and only serves to offset the revenues the PSAP needs from their participating communities. This results in insufficient planning for the long-term needs for 9-1-1 and transition to Next Generation 9-1-1 (NG9-1-1) services.

## Long-term Funding Viability and Contingency Fund Balance Use

The 9-1-1 surcharge revenues are declining in some communities as reported in the Existing Conditions Report and as documented by the Utah Tax Commission reports provided to the Utah 9-1-1 Committee. However, for some communities in the Salt Lake Metro region, the 9-1-1 surcharge revenues have increased from the 2008 levels as reported in the Utah 9-1-1 Committee report to the legislature.

Observance to the fluctuation in 9-1-1 revenues will be important as the primary source of funding for 9-1-1 operations is offset by general fund revenues. As 9-1-1 surcharge revenues decline, additional general fund revenues from the communities will be required. Conversely, if 9-1-1 surcharge revenues increase, less general fund revenues will be needed.

**9-1-1 Revenues**

| Salt Lake Region Communities | 2008 Revenue | 2010 Revenue | Percent of Increase |
|---|---|---|---|
| Salt Lake County (unincorporated) | $ 1,342,541 | $ 1,102,923.42 | -17.85 % |
| Alta | $ 4,269 | $ 3,876.77 | -9.19 % |
| Bluffdale | $ 53,277 | $ 56,250.15 | 5.58 % |
| Cottonwood Heights | $ 203,719 | $ 297,624.97 | 46.10 % |
| Draper | $ 302,197 | $ 22,641.54 | 6.77 % |
| Herriman | $ 81,515 | $ 99,127.56 | 21.61 % |
| Holladay | $ 167,959 | $ 178,839.01 | 6.48 % |
| Midvale | $ 228,058 | $ 221,279.54 | -2.97 % |
| Murray | $ 483,987 | $ 498,625.81 | 3.02 % |
| Riverton | $ 239,860 | $ 258,967.33 | 7.97 % |
| Salt Lake City | $ 2,443,310 | $ 2,288,925.48 | -6.32 % |
| Sandy | $ 737,340 | $ 791,744.44 | 7.38 % |
| South Jordan | $ 326,173 | $ 369,753.04 | 13.36 % |
| South Salt Lake | $ 257,659 | $ 251,179.84 | -2.51 % |
| Taylorsville | $ 402,122 | $ 416,978.10 | 3.69 % |
| West Jordan | $ 653,234 | $ 691,592.43 | 5.87 % |
| West Valley City | $ 794,073 | $ 897,184.67 | 12.99 % |
| **Total** | **$ 8,721,293** | **$ 8,747,514.10** | **0.30 %** |

It may be important to consider new methods of funding or assessment methods of billing users. Without a long range strategic plan, neither the region nor the Utah 9-1-1 Committee has a clear picture of whether the current 9-1-1 funding levels are adequate to sustain the current needs or the future of 9-1-1 services in the Salt Lake area or the State of Utah. Nor is there a clear understanding of what NG91-1 services will cost the state or the PSAPs. Planning for NG9-1-1 is essential and a strategic approach to NG9-1-1 services that integrates the PSAPs such as a hosted model or others that direct transition to NG9-1-1 should be considered by the Utah 9-1-1 Committee. PSAPs will need the guidance of the Utah 9-1-1 Committee in order to ensure that the full benefits of a comprehensive NG9-1-1 plan are realized for the state.

PSAPs are able to approach the Utah 9-1-1 Committee to request funding for items that would have ordinarily been paid for out of traditional 9-1-1 surcharge distribution or general revenue support. PSAPs are permitted also to request funding from the Utah 9-1-1 Committee even though the PSAP may have healthy fund balances. The criteria that the Utah 9-1-1 Committee uses to grant awards could be strengthened based on a strategic plan developed by the Utah 9-1-1 Committee.

The PSAPs are required to submit a form with their request for funding that identifies fund balance available to the PSAP, but there does not appear to be either a standard against which to evaluate the request from the PSAP or a willingness to decline the PSAP request for funding if other criteria are met and a healthy fund balance is available.

These actions deplete the Utah 9-1-1 Committee funds without a comprehensive plan for addressing the request in the most cost effective manner.

## Regional Funding Review

One of the prominent issues reported to GeoComm during the interviews with public officials and the governing bodies of VECC and UPD is the fact that there is confusion and disagreement over which organization should receive 9-1-1 surcharge funds from the telephone subscribers in their respective member communities. The "pay for service" model used in the area also presents opportunity for additional conflict as agencies have the option to move between dispatch service providers. This decision has financial and political consequences for both the abandoned PSAP and the receiving PSAP.

Currently, all 9-1-1 surcharge revenue is distributed to the primary PSAP for the entire county with the exception of the unincorporated area of the county. The 9-1-1 surcharge for the unincorporated area is distributed to the secondary PSAP which has law enforcement responsibility for this area. Currently, the calculation formula used to determine the number of transferred calls is done per Computer Aided Dispatch (CAD) event as entered into the primary PSAP CAD system. The calculation formula is modified periodically and has been changed three times within the past year.

A simpler approach to 9-1-1 surcharge distribution may be appropriate and considered more equitable by the stakeholders in the Salt Lake Metro area. The primary PSAP does answer the call, initially ascertains the needs of the caller and if appropriate transfers the call to the secondary PSAP for law enforcement dispatch or retains the call and dispatches fire/EMS if needed. GeoComm finds that there is a certain value to initial call answering and interrogation as well as fire/EMS dispatch services, but that tension occurs in the region over revenue streams which may be an indication that 9-1-1 surcharge funding is not sufficient. Sustainable services and systems is an essential component to providing high quality service to the public and an important Principle. Sustainability of high quality, consistent, professional standards of service levels, and adequate long-term planning becomes a cause for concern when client agencies can perceive that adequate funding is not available and staff cuts are discussed at public meetings.

Migration to NG9-1-1 technology is also likely to require a complete funding review. It would be appropriate for the region to consider undertaking a review at this time and in preparation for the changes that will occur due to NG9-1-1 services once perspective and direction from the Utah 9-1-1 Committee is understood.

## Other Revenue Considerations

In addition to 9-1-1 surcharge revenue and service fees from communities who receive call taking and dispatch services from both VECC and UPD, each agency has received modest revenue from other sources that should be noted. Both UPD and VECC have substantial fund balances which produce some interest revenue. For VECC the interest income amount is estimated for the Fiscal Year 2012 budget at $15,000. The UPD fund balance is more substantial than VECC but interest income was not reported. VECC also received rent from UCAN, as a tenant in the VECC facility. Rent income estimated for the Fiscal Year 2012 budget was $84,128. Both agencies have received grants from the Utah 9-1-1 Committee in the past but none are anticipated in the next three years.

## Local Dispatch Decisions Impact Costs and 9-1-1 Fund Distribution

If a local community decision-makers and elected officials determine that it is in the best interest of their citizens to split their dispatching services between two PSAPs it means that the community will be required to pay for both the call taking through the 9-1-1 surcharge, paid to the Primary PSAP and dispatch services paid through an assessment to the dispatching PSAP. Such decisions may be necessary under the current structure and agreed upon performance levels to receive the level of service desired by their taxpayers or response agencies. However, it should be recognized that these decisions, although they may have been agreed to for the community have the following results:

- Adds complexity to the call processing and may add potential delays due to the necessity to transfer a 9-1-1 call from the agency answering the call and the agency selected to dispatch the call for service
- Is not in keeping with the guiding service Principles adopted by the region
- Complicates the community's payment options and use of 9-1-1 funds

To prevent separate payments for both call taking and dispatch to two different entities, the only solution is to unify their dispatch with the call taking function. If that is not desired, distribution of their 9-1-1 funds will be to two different agencies.

## PSAPs Should Report and Certify the Use of 9-1-1 Surcharge Funds

As reported in the Existing Conditions Report, PSAPs receiving 9-1-1 surcharge funds are not required to submit any certification or audit to the State of Utah or the Utah 9-1-1 Committee stipulating how the

9-1-1 surcharge funds have been used for the purposes stated in statute. This is a sound governmental accounting practice and should be used in the case of 9-1-1 surcharge distribution.
The PSAP requesting a grant from the Utah 9-1-1 Committee is required to submit documentation to support that Utah 9-1-1 Committee grant funds have been used appropriately but not the 9-1-1 surcharge funds unless it is required in a local jurisdictional audit.

## All Communications Providers Should Conduct and Report an Annual True and Accurate Count for Customers

The 9-1-1 service provider reports do conduct and report an annual update subscriber count for wireline subscriber records for their own CenturyLink customers. However, it is not known if any wireless carrier, Competitive Local Exchange Carrier (CLEC), or Voice over Internet Protocol (VoIP) provider conducts a periodic reconciliation of their subscriber counts. There is no requirement in Utah statute or rules for the 9-1-1 service provider, the wireless carriers, or any other service provider such as a CLEC or VoIP provider to "certify" the number of subscribers. Since no certification or registration is required of the service providers it is not known if the appropriate level of revenue is being remitted.

GeoComm recommends that all service providers be required to submit an annual update to their subscriber counts in the Salt Lake City Metro area and should include a breakdown by community.

## 9-1-1 Strategic Planning is Essential to Sound Fiscal Management

GeoComm has recommended the Utah 9-1-1 Committee undertake a strategic planning process, and area PSAPs should also conduct this process. GeoComm found that no long range strategic planning is done at the local level. Capital expense for equipment replacement or required upgrades is addressed on an as needed basis and the funding for those expenses taken from fund balance at the larger PSAPs. As long as there is sufficient fund balance this strategy may work. However, contributing communities and policy makers need to know and understand what long-term fiscal expense might be under consideration. GeoComm recommends that the strategic planning process include a capital improvement planning component of a five to seven year outlook of major equipment, service improvements such as Telecommunications Service Priority (TSP), NG9-1-1 services, etc., and facilities as appropriate for their situation.

# Optimum Service Model Financial Discussion

This financial section is designed to provide the Utah 9-1-1 Committee, the county, and the participating agencies with a snapshot of the operational costs involved in establishment of the Optimum Service Model. The purpose of this exercise is not to provide exact budgetary information relating to the Optimum Service Model but to provide sufficient cost detail permitting local agencies to evaluate the feasibility of moving forward with the proposed model. GeoComm requested detailed budget information from each of the participating agencies. Many agencies provided this information in sufficient detail while others provided limited financial data or very high level information that is impossible to compare in a consistent manner. Therefore, this financial assessment is based on three underlying principles:

1. Comparison of current personnel related costs of the participating agencies and personnel related costs of the Optimum Service Model presented.
2. Identification of budget estimates for general operations of the Optimum Service Model presented.
3. Identification of budgetary estimates for the facility expenses associated start-up of the consolidation options presented.

## Assessment

GeoComm's assessment of the revenue and expense requirements of the new UECA organization reveal that considerable costs-savings may be realized in the county. Depending on the specific local decisions that are made in the transition process and how the new agency is formed, those savings may be greater or less than projected. The duplication of technology, facility, and staff that exists today with a primary and secondary PSAP are considerable. Reducing this duplication, while improving service and saving taxpayer dollars safeguards the public's standard of care expectations are key components to meet the Principles and is recommended. Staffing alone could save over $1.8 million depending on the configuration and staffing complement. Meeting the guiding principles of fair and equitable cost to the taxpayer is also realized by adopting this model.

For the purposes of our analysis, GeoComm has used the reported combined VECC and UPD budgets as a starting point for assessment. The combined budget for the two PSAPs is $14,153,342. This figure is based on reported budgets; however, GeoComm is challenged to report validated information due to variances among various sources of data. The financial calculations are a budget estimate based on the information provided and cannot be considered a true operational budget, but is a valuable planning and decision making tool. The budget will be impacted by decisions made by the Transition Team and will fluctuate based on determined staffing levels, CAD system, training, facility accommodations, etc. Significant transitional costs will be necessary for a smooth transition and should not be overlooked in the planning process.

**Current VECC and UPD Combined Budgets**

| Personnel Expense | Current Combined VECC and UPD |
|---|---|
| Full-time Wages and Benefits | $ 8,860,882 |
| Part-time/Per Diem Wages | $ 145,384 |
| Overtime | $ 500,389 |
| **Operating Expense** | **Current Combined VECC and UPD** |
| Supplies | $ 14,450 |
| Training and Travel | $ 42,763 |
| Rent and Utilities (electricity, water, sewer, gas) | $ 140,759 |
| Miscellaneous (basic office equipment, general building repairs, cleaning service, car allowance, insurance, professional memberships, headsets, chairs, technical support, etc.) | $ 1,876,287 |
| 9-1-1 Network and Database | $ 892,191 |
| **Maintenance** | |
| Radio | $ 91,000 |
| CAD | $ 494,986 |
| 9-1-1 CPE | $ 149,054 |
| Administrative Telephone | $ 12,082 |
| Legal/Accounting Services/Audit | $ 72,375 |
| Lease Obligations | $ 87,244 |
| Debt Service | $ 773,496 |
| **Total** | **$ 14,153,342** |

This table includes information provided from UPD and VECC during data collection and interview process and is based on 2011 actuals. UPD CAD costs include $45,000 for the CAD interface maintenance. (Reported VECC and UPD operating budgets are located in Appendix E.)

## Revenue Assumptions

The following revenue assumptions were made in order to appropriately calculate anticipated funding revenues and options:

- Revenue for the new county UECA is based on a population distribution. Revenue may be recalculated based on calls for service if desired but GeoComm believes that is a decision to be made as a part of the implementation process.
- The revenue calculations do not take into account the existing fund balances at either VECC or UPD.

- The UCAN lease for part of the facilities is assumed to continue.

The anticipated budget for the UECA organization is considerably reduced in the first year of operation, and remains lower than the combined current operations for the five years of projected costs.

**Projected Operating Budget for Unified Emergency Communications Agency**

| Personnel Expense | Current Combined VECC and UPD | UECA 2012-2013 | UECA 2013-2014 | UECA 2014-2015 | UECA 2015-2016 | UECA 2016-2017 |
|---|---|---|---|---|---|---|
| Full-time Wages and Benefits | $ 8,860,882 | $ 7,232,755 | $ 7,377,410 | $ 7,524,958 | $ 7,675,457 | $ 7,828,967 |
| Part-time/Per Diem Wages | $ 145,384 | $ - | $ - | $ - | $ - | $ - |
| Overtime | $ 500,389 | $ 361,638 | $ 368,871 | $ 376,248 | $ 383,773 | $ 391,448 |
| **Operating Expense** | **Current Combined VECC and UPD** | **UECA 2012-2013** | **UECA 2013-2014** | **UECA 2014-2015** | **UECA 2015-2016** | **UECA 2016-2017** |
| Supplies | $ 14,450 | $ 10,000 | $ 10,500 | $ 11,025 | $ 11,576 | $ 12,155 |
| Training and Travel | $ 42,763 | $ 25,000 | $ 26,250 | $ 27,563 | $ 28,941 | $ 30,388 |
| Rent and Utilities (Electricity, Water, Sewer, Gas) | $ 140,759 | $ 121,797 | $ 127,887 | $ 134,281 | $ 140,995 | $ 148,045 |
| Miscellaneous | $ 1,876,287 | $ 1,775,000 | $ 1,863,750 | $ 1,956,938 | $ 2,054,784 | $ 2,157,524 |
| 9-1-1 Network and Database | $ 892,191 | $ 1,054,886 | $ 1,082,313 | $ 1,110,453 | $ 1,139,325 | $ 1,168,947 |
| **Maintenance** | | | | | | |
| Radio | $ 91,000 | $ 95,550 | $ 100,328 | $ 105,344 | $ 110,611 | $ 116,142 |
| CAD | $ 494,986 | $ 200,000 | $ 210,000 | $ 220,500 | $ 231,525 | $ 243,101 |
| 9-1-1 CPE | $ 149,054 | $ 156,507 | $ 164,332 | $ 172,549 | $ 181,176 | $ 190,235 |
| Administrative Telephone | $ 12,082 | $ 12,686 | $ 13,320 | $ 13,986 | $ 14,686 | $ 15,420 |
| Legal/Accounting Services/Audit | $ 72,375 | $ 75,994 | $ 79,793 | $ 83,783 | $ 87,972 | $ 92,371 |
| Lease Obligations | $ 87,244 | $ 87,244 | $ 87,244 | $ 87,244 | $ 87,244 | $ 87,244 |
| Debt Service | $ 773,496 | $ 773,496 | $ 773,496 | $ 773,496 | $ 773,496 | $ - |
| **Total** | **$ 14,153,342** | **$11,982,553** | **$12,285,494** | **$12,598,368** | **$12,921,561** | **$12,481,987** |

In order to complete the assessment utilizing a "worst-case scenario," GeoComm assumed the funds needed to support the new agency would be derived through a cost-shared coordination fee agreed to by each of the participating communities. This cost-shared coordination fee is based on the percentage of population served until the model is adopted and a more sophisticated cost-sharing models can be developed that takes advantage of accurate, consistent workload reporting through the PSAP or as determined by the Transition Team.

| County Communities | 2010 Population | Percent of UECA Service Area/Population | New UECA Agency Cost-Share/Population |
|---|---|---|---|
| Bluffdale | 0 | 0.0% | $ 11,711 |
| Cottonwood Heights | 33,433 | 4% | $ 474,637 |
| Draper | 42,274 | 5% | $ 600,150 |
| Murray | 46,746 | 6% | $ 663,637 |
| Sandy | 87,461 | 10% | $ 1,241,655 |
| South Jordan | 50,418 | 6% | $ 715,767 |
| South Salt Lake | 23,617 | 3% | $ 335,283 |
| West Jordan | 103,712 | 12% | $ 1,472,365 |
| West Valley City | 129,480 | 15% | $ 1,838,184 |
| Unincorporated County | 152,065 | 18% | $ 2,158,816 |
| Alta | 383 | 0% | $ 5,437 |
| Riverton | 38,753 | 5% | $ 550,163 |
| Herriman | 21,785 | 3% | $ 309,274 |
| Holladay | 26,472 | 3% | $ 375,814 |
| Midvale | 27,964 | 3% | $ 396,996 |
| Taylorsville | 58,652 | 7% | $ 832,663 |
| **Total** | **843,215** | **100.0%** | **$ 11,982,552** |

GeoComm has also used the 2010 9-1-1 surcharge revenues to offset the required funding assessment of the communities. 9-1-1 surcharge revenues could fluctuate over time.

| County Communities | New UECA Agency Cost-Share/Population $$11,982,552 | 2010 9-1-1 Surcharge Revenue | UECA User Fees | Total |
|---|---|---|---|---|
| Bluffdale | $ 11,711 | - | $ 11,711 | $ 11,711 |
| Cottonwood Heights | $ 474,637 | $ 297,625 | $ 177,012 | $ 474,637 |
| Draper | $ 600,150 | $ 322,642 | $ 277,508 | $ 600,150 |
| Murray | $ 663,637 | $ 498,626 | $ 165,011 | $ 663,637 |
| Sandy | $ 1,241,655 | $ 791,744 | $ 449,910 | $ 1,241,655 |
| South Jordan | $ 715,767 | $ 369,753 | $ 346,014 | $ 715,767 |
| South Salt Lake | $ 335,283 | $ 251,180 | $ 84,103 | $ 335,283 |
| West Jordan | $ 1,472,365 | $ 691,592 | $ 780,772 | $ 1,472,365 |
| West Valley City | $ 1,838,184 | $ 897,185 | $ 941,000 | $ 1,838,184 |
| Unincorporated County | $ 2,158,816 | $ 1,102,923 | $ 1,055,892 | $ 2,158,816 |
| Alta | $ 5,437 | $ 3,877 | $ 1,561 | $ 5,437 |
| Riverton | $ 550,163 | $ 258,967 | $ 291,196 | $ 550,163 |
| Herriman | $ 309,274 | $ 99,128 | $ 210,147 | $ 309,274 |
| Holladay | $ 375,814 | $ 178,839 | $ 196,975 | $ 375,814 |
| Midvale | $ 396,996 | $ 221,280 | $ 175,716 | $ 396,996 |
| Taylorsville | $ 832,663 | $ 416,978 | $ 415,685 | $ 832,663 |
| **Total** | **$ 11,982,552** | **$6,402,339** | **$ 5,580,213** | **$ 11,982,552** |

In addition, because the communities in the region, other than the City of Salt Lake, would be served by a single agency, police and fire/EMS dispatch services were not separated or broken out. In the Optimum Service Model, the communities are expected to pay a single assessment to the new UECA.

It should be noted that Bluffdale 9-1-1 calls are answered at VECC but transferred to Utah County for law enforcement dispatch. VECC handles all fire and EMS dispatch for Bluffdale. While there is a CAD2CAD bridge between VECC and UPD, no such interface exists with Utah County at this time.

## Operational Fund Balance

GeoComm believes that the UECA will require a healthy fund balance or starting operational fund balance for unforeseen start-up costs of the new agency. The Transition Team should determine the specific level of contingency but it is recommended that the amount be sufficient to cover, at a minimum, six months of operations. The level of contribution from each existing agency (VECC and UPD) to the operational fund balance should be determined by the Transition Team and should be commensurate with an appropriate value such as communities served, call volume, or dispatch volume.

## Capital Improvement Plan

It will be necessary for the Transition Team to develop a five to seven year Capital Improvement Plan (CIP). The CIP development is an essential part of long range planning for the organization to help ensure the long-term health of the operation and to fulfill the appropriate level of fiscal responsibility to its member communities. CIP identifies the life cycle of critical components of the systems used in the PSAP and will assist with financial planning to replace those critical elements before they become risk to the agency.

Member communities, with whom the CIP should be shared during budget presentations, are informed of future large expenditures and can make policy and financial decisions both for the UECA and their own budgets based on concrete evaluations of capital replacement necessary for the operation. The CIP should include considerations of 9-1-1 equipment, computer and telephony components, generators, UPS systems, HVAC, major building repairs such as roofing, pavement resurfacing or windows, 9-1-1 position furniture replacement, and CAD. The CAD discussion will be a crucial discussion item for the Transition Team to address early in the transition process.

Until the new agency is on one CAD system the costs for maintaining two systems will continue. The sooner the Transition Team can decide on one CAD the better for the organization. Interfaces to transfer CAD data necessary to RMS should be investigated and pursued. Once the concern related to the transfer of CAD data to RMS systems is resolved, the objections to changing to a different CAD will be mitigated. Potentially a new CAD system may be the best option for the new agency, but that is a local decision and will involve adjustments to the budget. Whether a single CAD, now used by one or the other agency is the decision, or maintaining two CAD systems for a minimal time period, or the implementation of a new CAD is determined to be in the best interest of the new agency moving forward, all will have a cost implication to the budget such as maintenance and interface costs.

## Transition Decisions and Costs

Transition planning and implementation will require both staff and financial support. The Transition Team may want to appoint a full-time Transition Manager to manage the early stages of the transition prior to the appointment of the Executive Director. The effort to undertake the endeavor recommended should not be overlooked or assumed to be an easy function. Local transition decisions and correlating cost impacts may potentially include:

- Transition Manager salary
- Architectural services
- Building renovations including dispatch position furniture
- PSAP equipment additions/replacement/relocation
- Radio equipment additions/replacement/relocation
- CAD assessment and transition
- Service level agreements
- Radio channel dispatch support
- Legal services
- Human resources services
- Staffing and supervisory span of control decisions
- Transition Team planning activities
- Legislative support and funding
- Standard Operating Procedure (SOP) review and modification
- Training
- Overtime

It is reasonable to anticipate that local decisions and efforts completed during the transition and implementation process, could result in a higher cost amount during the early years of implementation. It may take several years to see a true "cost savings"; however, service improvements and other Principles would be realized more immediately.

## Cost Projections

In order for any potential consolidation to be successful, an equitable cost-sharing methodology must exist. There are a number of cost-sharing formulas that could support the UECA such as percentages based on:

- Population
- 9-1-1 Call Volume
- Events Dispatched
- Assessed Valuation

For the purposes of this report and assessing initial feasibility, GeoComm calculated individual contributions on the percentage of population served. It is important to note that:

- Some expenses are duplicated in both agencies that will be reduced or eliminated in the new model such as UPD CAD expense, CAD interface costs, 9-1-1 network costs for UPD, data cleanup expense by moving to a single GIS data set verses two
- A five percent increase in expenses is anticipated for most line items
- A two percent salary increases per year is anticipated
- Wages and benefits are combined; benefits have been calculated at 30 percent of wages
- Executive Director's salary is potentially low; GeoComm recommends that the Transition Team determine an appropriate salary to attract the experience level desired
- Projections may be high; as discussed earlier in this section, GeoComm purposefully looked at "worst case scenario" so not to present unrealistic projections

The costs associated with the new organization will need to be carefully reviewed line item by line item and appropriate decisions determined by the Transition Team.

# 8 Conclusion

Based on professional observations, interviews, and analysis of operational and financial data, presented in this final report and previous reports, GeoComm believes the Utah 9-1-1 Committee and the Public Safety Answering Point (PSAP) partners have been provided a comprehensive review of existing PSAP operations and recommendations to improving public safety services. These improvements are based on a set of PSAP articulated guiding principles which define the desired service level for the citizens of the Salt Lake Metro region. It is consensus among the public safety agencies in Salt Lake County that the Salt Lake Metro region public is best served:

- By a PSAP model that results in the least amount of time between call receipt and dispatch readiness
- When the cost to taxpayers is equitable and fair
- When the 9-1-1 service is sustainable
- When there is a high level of PSAP personnel competency
- When the 9-1-1 service and operations have a high degree of survivability
- When appropriate protocols and technology are in place to ensure the most effective dispatch response regardless of situation or location
- Has a governance model that ensures the citizen expected standard of care is implemented
- When there is stakeholder involvement in decision-making to ensure citizen expected standard of care is attained
- When there is effective public safety communications management in place to ensure faithfulness to the principles held by the community

During review of the current structure, GeoComm determined opportunities for improvement and those opportunities are presented within this report; however, during this unbiased professional consultation effort, it became clear that an Optimum Service Model would best achieve the principles.

*GeoComm recommends that the Utah 9-1-1 Committee and PSAP partners conceptually agree to the Optimum Service Model, appoint a Transition Team, and begin to plan the transition. The decision to support this model should not be based on political agendas, personal beliefs, potential cost-savings, or operational efficiency; ultimately the model should be supported because it best meets the guiding Principles and high quality service to the public.*

The optimum and recommended model provides the region with a new primary PSAP, serving the jurisdictions of the current Salt Lake Valley Emergency Communications Center (VECC) operation and the Unified Police Department (UPD) of Greater Salt Lake operations. This recommended model provides for the current VECC operation and UPD operation to form a new, single entity, which GeoComm calls Unified Emergency Communications Agency (UECA) for ease of reference. The Optimum Service Model also specifies for Salt Lake Police Department to remain a primary PSAP, as well as the current secondary PSAPs remaining; Department of Public Safety Salt Lake Communications Center Secondary PSAP and University of Utah Department of Public Safety PSAP.

The Optimum Service Model also requires changes within the current processes of the Utah 9-1-1 Committee and establishment of a strategic planning process. The recommendations for the Committee should be pursued immediately to assist in a smoother process for the PSAP partners and ultimately for other PSAPs across the state.

This Optimum Service Model results in the greatest service enhancement for citizens, visitors, and responders of the region, and ultimately meets the Principles. There should be no misunderstanding. The recommendation is for a new organization; one agency is not being folded into the other with the same structure and functions remaining intact. Current PSAPs will no longer exist, and a new entity is formed. Decisions of how to manage 9-1-1 services in Salt Lake County going forward will be determined in a collaborative manner and under a unified structure. This recommendation requires a complete overhaul of operations, and a new way of doing things with a new leadership structure. Such a dramatic shift is not recommended lightly and significant consideration was given to other models, which most likely would have been easier to implement. However, GeoComm believes that taking the easy solution was not in the best interest of citizens of the region. We recognize that the recommendations will not be popular with all parties. We also recognize that there may be attempts to discredit GeoComm, the report, or the recommendations. Such actions serve to obfuscate the real issues and will not advance quality 9-1-1 service in the area.

All involved must understand that transition to this model will not happen overnight and will not be successful without extensive effort and leadership; it will require significant planning over a period of several years. There is detailed transition and implementation planning that will be based on local decisions and must be determined by the Transition Team. GeoComm understands the transition process will be challenging at times, but ultimately committing to the higher level service model will best serve the region. The goal of this feasibility study, and what was required of GeoComm, was to determine the most effective model for service improvements and a high level project of costs to achieve that model. It should be understood that the cost estimates and projections are based on information and data provided by the local PSAPs and are a minimum of what would be required to establish the new agency.

Modifications to assumptions that may be made by the Transition Team will affect the staffing levels, budget, and other aspects of transition planning. What has been provided is a baseline from which to begin the process of implementation. Specific planning and further-defined budgetary considerations are part of the next phase of implementation once the concept of the Optimum Service Model is embraced.

We commend the Utah 9-1-1 Committee and PSAP partners for their candid and open discussions and willingness to look at self-improvement. The Salt Lake Metro 9-1-1 region is fortunate to be served by knowledgeable and dedicated individuals. It is this spirit of passion for quality 9-1-1 services that GeoComm trusts will move the region forward.

Appendix
A

# Data Collection Tool

GeoComm is pleased to partner with the State of Utah and Salt Lake Metro PSAPs for this important public safety assessment and feasibility study. We believe a complete and objective analysis of the current operations will assist us in providing you with the best information possible to make informed decisions about your future public safety communications operations.

To effectively manage the project, we need to collect some basic data about your Public Safety Answering Point (PSAP) operations prior to the formal initiation meeting and the initial site visits to follow. We recognize the data collection process is time consuming and sometimes challenging. However, in order to make informed decisions about the critical issues being considered, detailed information gathering is necessary. The attached data collection tool has been designed to provide us with valuable information that will help make the project initiation meeting and initial site visits more productive.

GeoComm considers every Public Safety Communications Center, Emergency Communication Center, or PSAP to be a unique working environment, whether it is law enforcement PSAP, fire/rescue/EMS PSAP, combined center, or multi-agency operation. The political, management, technical, operational, and staff dynamics vary widely between and within each entity that GeoComm has assisted over the years. For these reasons and for the purpose of this data collection tool, GeoComm uses the acronym PSAP generically to refer to all locations at which a request for emergency response is answered, answered and dispatched, or dispatched only.

The completed data collection tool should be returned in electronic format by Friday, October 14. If at any point you need to contact the GeoComm Project Lead with questions or clarification, please feel free to do so.

Project Lead: Nancy Pollock

Phone Number: 651-592-0339

Email Address: npollock@geo-comm.com

There are 34 questions in this survey

## Contact Information

Complete the primary contact at your PSAP for this project.

### 1. Provide the Point of Contact at your PSAP for this project.

*

| | |
|---|---|
| Name | |
| Title | |
| Agency | |
| Address | |
| City | |
| State | |
| Zip Code | |
| Telephone | |
| Email | |

## PSAP Demographics

Complete the following information with the requested details specific to your agency.

### 2. Wireless Phase II Capabilities

| | Yes | Uncertain | No |
|---|---|---|---|
| Does your agency receive wireless (cellular) location information/data with 9-1-1 calls? | ○ | ○ | ○ |
| Is the wireless location plotted on a map for the call taker? | ○ | ○ | ○ |

### 3. Seven-Digit Telephone Calls Please choose the appropriate response.

*

Please choose the appropriate response for each item:

| | Yes | Uncertain | No |
|---|---|---|---|
| Seven-digit calls are received on 9-1-1 telephone equipment | ○ | ○ | ○ |
| Seven-digit calls are received on separate telephone equipment | ○ | ○ | ○ |

### 4. 9-1-1 Trunks

*

| | Total Number |
|---|---|
| Wireless only 9-1-1 trunks | |
| Wireline only 9-1-1 trunks | |
| Combined Wireless/Wireline 9-1-1 trunks | |

### 5. What is the average call processing time (in seconds) from when the call is answered until dispatch is complete?

*

Please write your answer here:

### 6. List all agencies for which dispatch services are provided, and include the type (Law, Fire, EMS or Other.)

**Example: Smithville, Fire**

Please write your answer(s) here:

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18

## 7. What is the population served by your PSAP?

Please write your answer here:

## 8. Ancillary Duties

PSAP personnel can be involved in a variety of activities that are unrelated to the effective delivery of 9-1-1 service. The following section documents traditional duties that PSAP personnel spend a substantial amount of time on in addition to providing 9-1-1 service.

## Indicate any non-call taking and/or dispatch duties and responsibilities assigned to PSAP staff. *

Please choose the appropriate response for each item:

| | Yes | Uncertain | No |
|---|---|---|---|
| Staffing of public information window | ○ | ○ | ○ |
| Jail duties | ○ | ○ | ○ |
| Issuing permits | ○ | ○ | ○ |
| Administrative phone calls | ○ | ○ | ○ |
| Processing warrant inquiries | ○ | ○ | ○ |
| Clerical duties | ○ | ○ | ○ |

## 9. Please list additional ancillary duties.

Please write your answer here:

## 10. Annual 9-1-1/Emergency Call Volume

*

| | 2008 | 2009 | 2010 | 2011 (as of 9/30) |
|---|---|---|---|---|
| 9-1-1/Emergency Wireline | | | | |
| 9-1-1/Emergency Wireless | | | | |
| 9-1-1/Emergency Voice over Internet Protocol (VoIP) | | | | |

Call volume based on calendar year (Jan 1 - Dec 31)

## 11. Annual Non-Emergency Call Volume

*

| | 2008 | 2009 | 2010 | 2011 (as of 9/30) |
|---|---|---|---|---|
| Non-Emergency Calls | | | | |

Call volume based on calendar year (Jan 1 - Dec 31)

## 12. Annual total incidents/calls for service

### Law Enforcement

*

| | Dispatched Incidents | On View Incidents | Traffic Stops |
|---|---|---|---|
| 2008 | | | |
| 2009 | | | |
| 2010 | | | |
| 2011 (as of 9/30) | | | |

*Dispatched Incidents are incidents resulting from a call directly to the agency or a transferred call from a primary PSAP agency. On View Incidents are initiated by a field unit – not including traffic stops, i.e. patrol reports, open door, vandalism. Traffic stops are officer initiated motor vehicle activity*

*Call volume based on calendar year (Jan 1 - Dec 31)*

## 13. Annual total incidents/calls for service

### Fire

*

| | Dispatched Incidents |
|---|---|
| 2008 | |
| 2009 | |
| 2010 | |
| 2011 (as of 9/30) | |

*Dispatched Incidents are incidents resulting from a call directly to the agency or a transferred call from a primary PSAP agency.*

*Call volume based on calendar year (Jan 1 - Dec 31)*

## 14. Annual total incidents/calls for service

### EMS

*

| | Dispatched Incidents |
|---|---|
| 2008 | |
| 2009 | |
| 2010 | |
| 2011 (as of 9/30) | |

*Dispatched Incidents are incidents resulting from a call directly to the agency or a transferred call from a primary PSAP agency.*

*Call volume based on calendar year (Jan 1 - Dec 31)*

## 15. PSAP Staffing

Document staffing levels, budgeted positions, and authorized positions

### For the current fiscal year, list the authorized/budgeted positions and current staffing levels.

***Please note: Each allocated position should only be counted once. For example, an allocated position will be counted as a dispatcher "or" a combined call-taker/dispatcher.***

*

| | Full-time authorized positions |
|---|---|
| Director | |
| Manager | |
| Technical Manager/Coordinator | |
| Administrative Assistant | |
| Call-taker | |
| Dispatcher | |
| Combined Call-taker/Dispatcher | |

### 16. Are all of these positions funded in the dedicated PSAP budget? *

Please choose **only one** of the following:

- ○ Yes
- ○ No

### 17. Do you have additional authorized personnel not accounted for in the chart above?

*

Please choose **only one** of the following:

- ○ Yes
- ○ No

### 18. If the answer is yes, please list:

Please write your answer here:

### 19. Does your PSAP have any part-time staff?

**If yes, please explain how your agency handles scheduling, budget, etc., for those individuals.**

*

Please choose **only one** of the following:

- ○ Yes
- ○ No

Make a comment on your choice here:

## 20. Please list your PSAP's staff turnover rate for each position (calculated by dividing the number of allocated positions by the number of terminations/resignations)?

| | 2008 | 2009 | 2010 | 2011 (as of 9/30) |
|---|---|---|---|---|
| Director | | | | |
| Manager | | | | |
| Technical Manager/Coordinator | | | | |
| Administrative Assistant | | | | |
| Call-taker | | | | |
| Dispatcher | | | | |
| Combined Call-taker/Dispatcher | | | | |

## 21. Please describe your scheduling system.

*

Please write your answer here:

## 22. Schedule Sample

*

Please choose the appropriate response for each item:

| | Yes | Uncertain | No |
|---|---|---|---|
| Is a random sample of physical schedules available to GeoComm? | ○ | ○ | ○ |

## 23. Indicate the average number of paid hours taken by PSAP operations staff annually in the following categories:

*

Please write your answer(s) here:

- Vacation/Paid time off (PTO)
- Sick Leave
- Holiday
- Continuing Education/Training

### 24. Technical

This section will capture the technical, radio, and interoperability information.

## Technical, Radio, and Interoperability Information

**Please indicate information such as types of systems, version of software, etc.**

*

| | Brand/model of system | Software Version | Maintenance Agreement (Yes or No) |
|---|---|---|---|
| Computer Aided Dispatch (CAD) | | | |
| 9-1-1 Customer Premise Equipment (CPE) | | | |
| Mapping | | | |
| Records Management System (RMS) | | | |
| Radio Control Console | | | |

### 25. Financial

Budget and Expense Detail

### How is your PSAP funded?

*

Please write your answer here:

### 26. Financial Information

**Provide the expense detail for your agency.**

| | Actual 2009 | Actual 2010 | Budget 2011 |
|---|---|---|---|
| Full Time Wages | | | |
| Part Time/Per Diem Wages | | | |
| Overtime | | | |
| Shift Differential | | | |
| Holiday Pay | | | |
| Training Wages | | | |

| | Actual 2009 | Actual 2010 | Budget 2011 |
|---|---|---|---|
| Supplies | | | |
| Training and Travel | | | |
| Utilities (Electricity, Water, Sewer, Gas) | | | |
| Miscellaneous (Headsets, Chairs, Other) | | | |
| Radio - Capital | | | |
| Radio - Maintenance | | | |
| CAD - Capital | | | |
| CAD - Maintenance | | | |
| Administrative Telephone - Capital | | | |
| Administrative Telephone - Maintenance | | | |

**27. GIS analysis is a portion of the deliverables for your project. As a part of the analysis, GeoComm will need a sample set of your Geographic Information System (GIS) data, Master Street Address Guide (MSAG) and Automatic Location Identification (ALI) database. Please provide the contact person(s) within your agency for this data.**

| | Name | Title | Phone | Email |
|---|---|---|---|---|
| GIS Data | | | | |
| MSAG | | | | |
| ALI Database | | | | |

## Additional Point of Contact Information

**28. Please provide contact information for the following points of contact for the PSAP. If it is a vendor that provides the service, please provide the vendor contact information.**

Please write your answer(s) here:

- Information Technology Point of Contact
- Title
- Agency
- Telephone
- Email

## 29. Training Point of Contact

Please write your answer(s) here:

- Training Point of Contact Name
- Title
- Agency
- Telephone
- Email

## 30. Radio Point of Contact

Please write your answer(s) here:

- Radio Point of Contact Name
- Title
- Agency
- Phone Number
- Email

## 31. Documents request

## Does your agency have the following documents available?

*

Please choose the appropriate response for each item:

| | Yes | Uncertain | No |
|---|---|---|---|
| Copies of dispatching contracts/MOUs | ○ | ○ | ○ |
| Personnel Policy manual and/or Employee Handbook | ○ | ○ | ○ |
| Budgets for 2009, 2010, and 2011, including a breakdown of revenue and PSAP costs | ○ | ○ | ○ |
| Training Program overview/policy or manual | ○ | ○ | ○ |
| Standard Operating Procedures manual | ○ | ○ | ○ |
| Strategic Planning Documents | ○ | ○ | ○ |

| | Yes | Uncertain | No |
|---|---|---|---|
| Retirement Plan if not within collective bargaining documentation | ○ | ○ | ○ |
| Applicable Collective Bargaining Agreement (CBA)(s) | ○ | ○ | ○ |
| Capital Improvement Plan | ○ | ○ | ○ |

### 32. If the documents requested above are able to be provided electronically, please upload to the survey. If not, please have the documents available for the consultant during the initial site visit.

Attach the aforementioned documents along with the survey.

### 33. Please provide a staffing organizational chart.

Attach the aforementioned documents along with the survey

## Survey Completion

Name and title of person completing this survey.

### 34. Name and title of person completing this survey.

**Agency:** _____

## *Staffing Assessment Worksheet*

| Annual Call Volume for Calendar Year 2011 | |
|---|---|
| 9-1-1 Call Volume | |
| Non-emergency Call Volume | |
| Administrative Call Volume | |
| Total Combined Call Volume | |
| Average Call Duration, if available | |

| Normal (peak) Number of Field Units | | | | Current Minimum Staffing | |
|---|---|---|---|---|---|
| | Shift A | Shift B | Shift C | Shift Supervisor | |
| Patrol Field Units | | | | Police Dispatcher | |
| Administrative Field Units | | | | Fire Dispatcher | |
| Traffic Field Units | | | | Call Taker/Dispatcher | |
| Investigative Field Units | | | | Total Allocated Operational Positions | |

| | | | |
|---|---|---|---|
| Annual Fire Call Volume | | Number of Fire Stations | |

| Annual Leave Hours (Average Employee) | | | |
|---|---|---|---|
| Vacation | | | |
| Sick Leave | | | |

| | | | | |
|---|---|---|---|---|
| **Holiday** | | | | |
| **Training** | | | | |
| **Other** | | | | |
| **Total Annual Leave Hours** | | | | |

Pay Range: List the minimum and maximum pay range for each category of staff at the PSAP.

| | Minimum Pay 2011 | Maximum Pay 2011 |
|---|---|---|
| Director | | |
| Manager | | |
| Emergency Operations Coordinator | | |
| Supervisor (Operations) | | |
| Technical Personnel | | |
| Quality Assurance/Public Information Officer | | |
| MSAG Coordinator/Systems Administrator | | |
| Training Coordinator | | |
| Administrative Assistant | | |
| Call Taker/Dispatcher | | |

## ***Equipment Life Cycle Estimates***

| | Year Acquired | Estimated Replacement or Upgrade Year | Last known cost of equipment |
|---|---|---|---|
| **9-1-1 CPE** | | | |
| **Logging Recorder** | | | |
| **CAD** | | | |
| **CAD Interfaces** | | | |
| **Administrative Telephone** | | | |
| **Radio Consoles** | | | |

## ***Budget Worksheet***

| | Actual 2011 | Budget 2012 |
|---|---|---|
| **Full-Time Wages** | | |
| **Part-Time/Per Diem Wages** | | |
| **Overtime** | | |
| **Shift Differential** | | |
| **Holiday Pay** | | |
| **Training Wages** | | |
| **Supplies** | | |
| **Training and Travel** | | |
| **Utilities (Electricity, Water, Sewer, Gas)** | | |
| **Miscellaneous (Headsets, Chairs, Other)** | | |
| **Radio - Capital** | | |
| **Radio - Maintenance** | | |
| **9-1-1 CPE - Capital** | | |
| **9-1-1 CPE - Maintenance** | | |
| **CAD - Capital** | | |
| **CAD - Maintenance** | | |
| **Lease Obligations (please list type below)** | | |
| **Legal or Accounting Services** | | |
| **Facility Rent** | | |
| **Debt Service or Bond Payment** | | |
| **Administrative Telephone - Capital** | | |
| **Administrative Telephone - Maintenance** | | |

Please indicate type of lease obligations: (Examples include building or facility leases, equipment leases such as 9-1-1 CPE or logging recorders if not purchased, radio equipment leases, antenna site leases, any long-term service agreements with penalty clauses)

| |
|---|
| |
| |
| |
| |
| |
| |
| |

**Person completing worksheet:** _____ **Date:**_____

Appendix B

# Project RETAINS

Chart from Staffing and Retention in Public Safety Communications Centers: A Follow-up Study, January 2009 Research Report, APCO Project RETAINS Responsive Efforts to Assure Integral Needs in Staffing, George Mason University Center for Social Science Research, page 7

**Table 1: Center Characteristics, by Size**

| | Small | Medium | Large |
|---|---|---|---|
| Number of authorized | 8 | 36 | 141 |
| Number of agencies served | 11 | 22 | 32 |
| Number of consoles | 3 | 11 | 40 |
| Number of services provided | 9 | 9 | 8 |
| Geographic area (square miles) | 1,200 | 1,100 | 1,700 |
| Population | 47,000 | 390,000 | 780,000 |
| Total incoming call volume | 69,000 | 290,000 | 1,100,000 |
| Total 9-1-1 call volume | 15,000 | 128,000 | 545,000 |
| Total dispatched | 22,000 | 180,000 | 790,000 |
| Average answer time (seconds) | 12 | 7 | 12 |
| Abandoned call rate (per 100) | 7 | 8 | 6 |

Appendix C

# Ancillary Duties

The following duties were reported by the study Public Safety Answering Points (PSAPs) as additional duties beyond 9-1-1 call taking and processing.

| PSAP | Ancillary Duties |
|---|---|
| Department of Public Safety Communications Center | The PSAP staff has ancillary duties including answering administrative telephone calls. Additional duties include handling after hour needs for the Department of Emergency Management, Department of Corrections, Insurance Fraud Division, Tax Commission, Motor Vehicle Enforcement, and Attorney General's Office. The PSAP also responds to National Crime Information Center (NCIC) and National Law Enforcement Telecommunications System (NLETS) query requests. |
| Salt Lake City Police Department PSAP | The Salt Lake City Police Department PSAP staff has ancillary duties including answering non-emergency/administrative inbound calls to the administrative line. |
| University of Utah Department of Public Safety PSAP | The PSAP staff has ancillary duties including answering all nonemergency inbound calls for the police department. In addition, the staff is responsible for ancillary duties such as:<br>▪ Staffing public information window and responding to walk-in traffic<br>▪ Administrative telephone calls (reported at 36,000 annually)<br>▪ Processing warrant inquiries<br>▪ Clerical duties for the department<br>▪ Monitoring over 300 alarm system |
| Unified Police Department of Greater Salt Lake PSAP | The PSAP staff has identified the following ancillary duties including answering nonemergency and administrative inbound telephone calls and processing warrant inquires. The PSAP also reports providing dispatch services for Jail Transport Law Enforcement. In addition, the staff is responsible for:<br>▪ NCIC entries, clear and cancels, and hit confirmation<br>▪ Teletype hit confirmation<br>▪ Monitor UPD and Taylorsville Police Department teletypes<br>▪ Office wide paging services and call outs<br>▪ Repossession tracking<br>▪ After hour telephone all divisions<br>▪ Monitor the "Tip-Soft" texting tip line<br>▪ Office wide call outs via paging system<br>▪ Monitor EOC via cameras after hours and staffing EOC when activated |

| PSAP | Ancillary Duties |
|---|---|
| | ▪ Chaplain call outs and notifications<br>▪ Monitoring of local and national news |
| Salt Lake Valley Emergency Communications Center | Administrative telephone calls, processing warrant inquiries, and clerical duties |

**Additional VECC duties not included in the chart:**

Support duties:

- Answer and process non-emergency calls
- Active wanted and other criminal process checks (protective orders, restraining orders)
- Perform criminal history checks through automated databases
- Motor vehicle registry inquiries
- Driver license checks, insurance, and related driver and ownership information
- Monitor and manage resources by type, location, and assignment
- Participate in emergency notification via authorized city, county, and statewide programs
- Coordinate Geographic Information System (GIS) activities with city GIS personnel – only ALI discrepancy reports should be required
- Collect AED information for inclusion in center mapping applications
- Collects cell phone and Voice over Internet Protocol (VoIP) information from county residents for inclusion in emergency notification programs  If advertised – it becomes a PSAP function – but VECC has front office help as well

Specialized teams and skill sharing programs:

- Child Abduction Response Team (CART)
- Critical Incident Stress Management Team (CISMT)
- Incident Management Team (IMT)
- Client Services-Communications Unit Technician (COMT) and Communications Unit Leader (COML)
- Quality Assurance (QA) review
- Manage disparate radio system/audio patching

Management activity:

- Human resources related activities (pay, retirement/benefit planning, etc.)
- Contract management
- Budget-related activities

- Accounts receivable/payable activities
- New employee testing
- Emergency Operations Center (EOC) liaison activities
- Grant management
- National Incident Management System (NIMS) program management
- Federal Communications Commission (FCC) licensing
- Training
- Internal and external management of required certifications
- All technical systems management
- Risk/safety management
- Management for incident information requests
- Public Information Officer (PIO) - media relations
- 9-1-1 public education training at city events
- Conduct PSAP education tours

Appendix D

# GIS Data Report Card Results and Analysis

## Background

In today's world of public safety, Geographic Information Systems (GIS) is being used for plotting caller locations at Public Safety Answering Points (PSAPs). As public safety moves forward into Next Generation 9-1-1 (NG9-1-1), GIS plays a more critical role in the validation of location information and routing of 9-1-1 emergencies into the correct PSAP. Therefore, the importance of highly accurate GIS data for local and surrounding areas is critical.

As part of the Salt Lake Metro 9-1-1 Assessment and Feasibility study, the Data Report Cards (Attachment 1) will outline the analysis results of the GIS data used in the primary and secondary PSAPs. The five PSAPs outlined in the study all use GIS data provided by different sources in their dispatch mapping applications, however data sharing does exist between some of the agencies. The table below outlines the sources of GIS data used in the data report card analysis.

| PSAP | GIS Data Source |
|---|---|
| Salt Lake City Police Department Primary PSAP | Salt Lake City |
| Salt Lake Valley Emergency Communications Center (VECC) Primary PSAP | VECC |
| Unified Police Department (UPD) of Greater Salt Lake Secondary PSAP | Salt Lake County |
| Department of Public Safety Salt Lake Communications Center Secondary PSAP | Utah Automated Geographic Reference Center (AGRC) |
| University of Utah Department of Public Safety Secondary PSAP | University |

GeoComm conducted interviews at each PSAP to obtain background information on local GIS data and effectiveness of data in call processing. All five PSAPs believe their current GIS data meets their call processing needs.

**University of Utah Department of Public Safety PSAP**

The University of Utah is a secondary PSAP and receives calls transferred from Salt Lake City Police Department PSAP. The GIS data being used in the University of Utah PSAP is created and maintained by the University and is a building footprint layer not a centerline. The telephone records associated with the University have been updated to include accurate sub-address information that allows the dispatchers to receive more detailed location information during a 9-1-1 call from a telephone on University property.

The Automatic Location Identification (ALI) records for the University were geocoded against the Salt Lake City centerline.

**Salt Lake City Police Department PSAP**

Salt Lake City Police Department PSAP has plans to merge with Salt Lake City Fire Department PSAP. The combined PSAP will use a new Computer Aided Dispatch (CAD) system and the fire department needs specific street features that are not part of the city GIS street data. The police department has decided to use the data from the AGRC in the new CAD system. Currently the police department PSAP uses data supplied by Salt Lake City. The current data from Salt Lake City was used in the analysis.

**VECC**

VECC has established a strong maintenance process that allows local jurisdictions to participate in the maintenance process through two-way replication. The VECC data is combination of multiple local data into a regional dataset. Data provided by VECC covered full region. The road segments analyzed were everything outside of Salt Lake City limits. The community boundary was a data layer supplied by VECC called Cities.

**UPD**

GeoComm worked with Salt Lake County to obtain centerline and boundary data used at UPD. GeoComm was made aware of an address point database that is being maintained at the county but due to security issues was not able to obtain the data for analysis. The address points are located on the building structure and contain the address attribute of the structure. The county is developing a point for every address in the county. The data provided by the county covered the full region. The road segments were determined by all segments that fell outside of the Salt Lake City limits. The polygon layer called city_curr was provided by the county and used in the analysis.

**DPS**

The Department of Public Safety Salt Lake Communications Center Secondary PSAP (DPS) uses GIS data from AGRC. The state provided street centerline, law enforcement, county and municipal boundaries for the full region. The data used for analysis purposes was the street centerline and municipal boundaries.

# Analysis Process

The GeoComm review process followed the synchronization testing outlined by NENA in Synchronizing *GIS with MSAG & ALI* found on the NENA website as document 71-501, approved September 8, 2009. The analysis provides a view into how accurate the GIS data is in relation to the Master Street Address Guide (MSAG) and the ALI databases.

The results aid in determining the condition of GIS data for:

1. Plotting of wireline call locations using a PSAP mapping application
2. Use of GIS data within NG9-1-1 network functions of location validation and call routing

The main databases used in for analysis were GIS data, MSAG, and the ALI. The GIS data layers consisted of the street centerline, address points if available along with jurisdictional boundaries.

*The reported error rates do not reflect on the success rate of call locations within the PSAPs and their respective CAD systems as software configurations can enhance the success rate in the PSAP.*

*The analysis process for this report is meant to provide the region a synchronization level of the MSAG, ALI and GIS data in preparation for NG9-1-1.*

The process included an independent review of databases by GeoComm as well as synchronization analysis between multiple data sets. The independent analysis was based on the following map data standards for public safety:

- MSAG must not contain overlapping entries
- Centerline must be broken and snapped at same grade intersections and service boundaries
- Centerline must not contain overlapping address ranges within a community

The dependent analysis process reviewed the levels of synchronization between the ALI/MSAG data and the GIS road centerline. The geocoding process does not use address locators but uses what GeoComm refers to as "precision geocoding." Precision geocoding synchronizes the data based on actual attribute match. NENA NG9-1-1 specifications call for an exact match between location information such as ALI and the GIS data. Any variation from exact match is considered an error. As example, if an MSAG has AV as a street suffix and the map data uses AVE that is not an exact match and therefore will result in an error where it may not be within a CAD system or other geocoding processes. NENA has not finalized the GIS data model for NG9-1-1 and is determining how alias names will be handled within the model. The Data Report Card results did not take into account alias names due to this issue.

# Analysis Results

The following section provides the analysis results of the independent and synchronized testing that was completed for the Data Report Cards. A digital file of fallout from each analysis was provided to the PSAPs for review with their GIS provider.

## MSAG Review

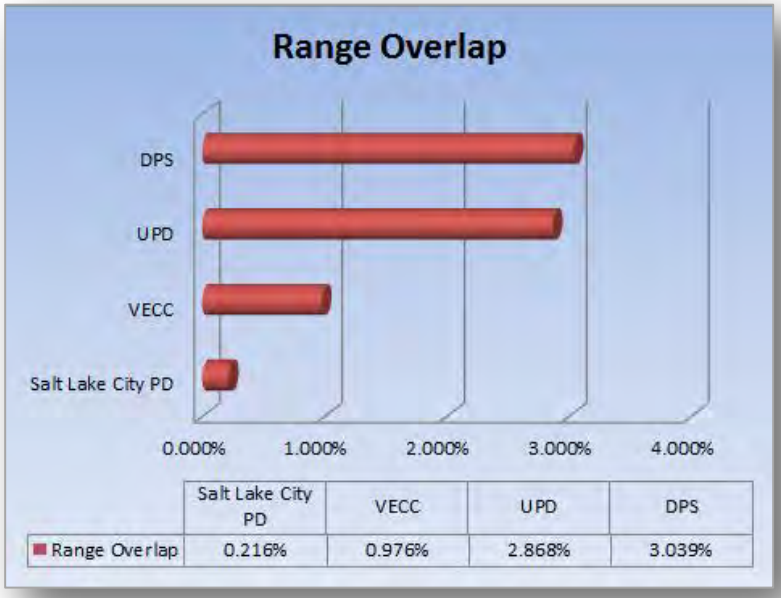
The MSAG for the study area is maintained by the two primary PSAPs: Salt Lake City Police Department and VECC. The MSAG analysis results showed no overlapping records. The VECC MSAG contained 12 records where the low and high address fields were not populated. After a review, it appears that the 12 records denoted points of interest and may not have a specific house number.

## Road Centerline Review

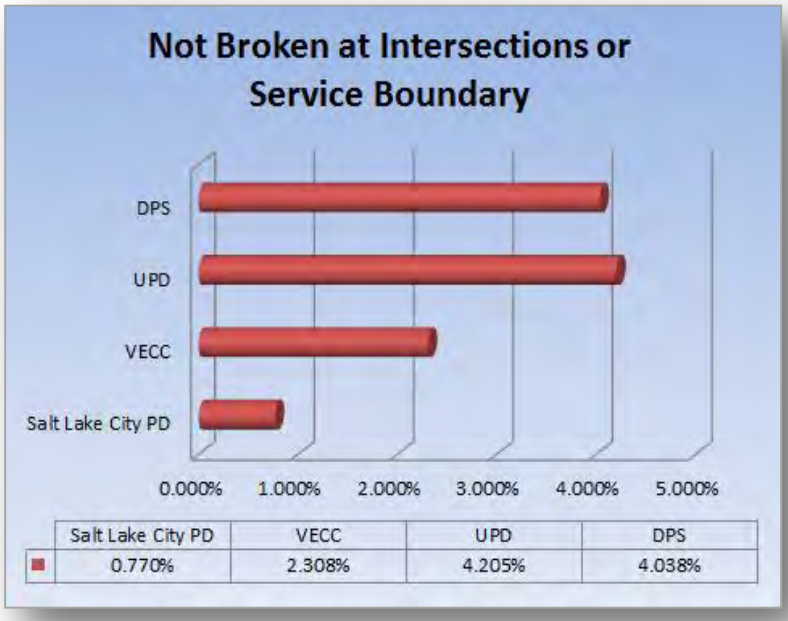
Road centerline and jurisdictional data was available from the four GIS data sources: Salt Lake City, VECC, Salt Lake County, and AGRC. The University of Utah uses a building footprint layer and will not be listed in centerline review.

Salt Lake County has developed an address point layer but it was not available for this project. Each data set contained street data for the full county including Salt Lake City. The data from Salt Lake City was the only data that stopped at the jurisdictional boundary. For analysis purposes, Salt Lake City data was removed from the data being used in UPD and VECC. As example, the range overlap issues reflect the geographic area of the associated primary PSAP.

The independent analysis for the road centerline data looked for overlapping ranges and segments that were not broken and snapped at intersections or service boundaries. Error counts noting segments not broken at intersections may include acceptable errors such as overpasses or underpasses. The tables on the following page display the results of the two analysis categories.




| | Salt Lake City PD | VECC | UPD | DPS |
|---|---|---|---|---|
| Range Overlap | 0.216% | 0.976% | 2.868% | 3.039% |



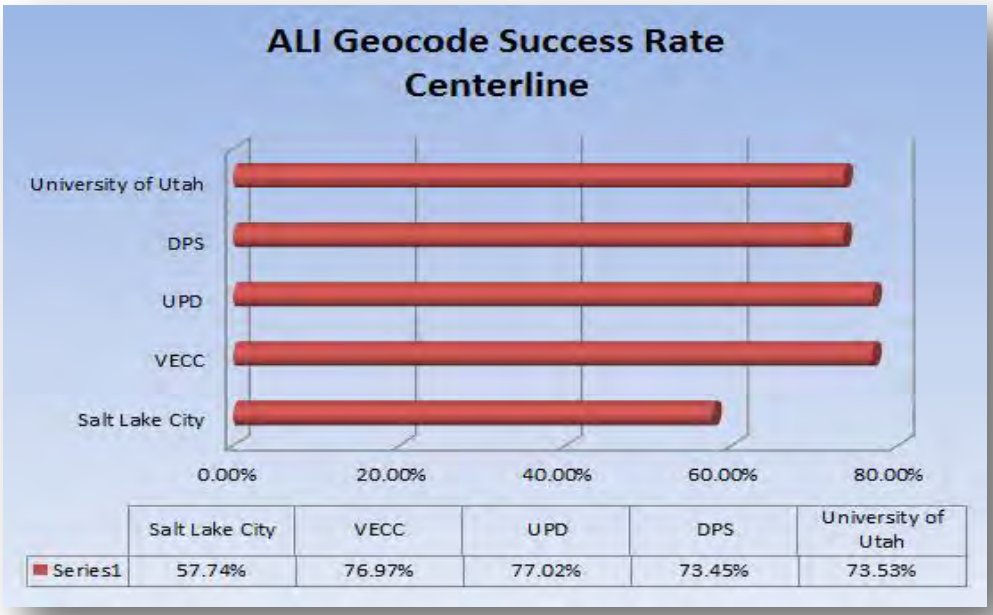

| | Salt Lake City PD | VECC | UPD | DPS |
|---|---|---|---|---|
| | 0.770% | 2.308% | 4.205% | 4.038% |

## Geocoding ALI Database to the Road Centerline

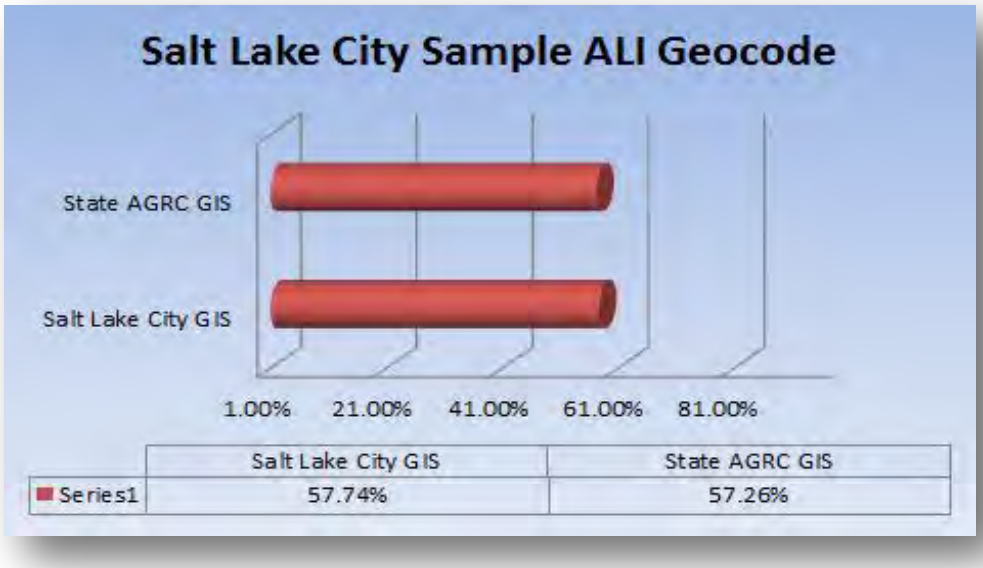
GeoComm was able to receive the ALI database from the Salt Lake City Police Department and VECC. This study calls for sample review of 50,000 records against the GIS data. Due to the organization of the Salt Lake metro PSAPs and source GIS databases, GeoComm created a sample of 10,000 addresses from the county and city sources. The city ALI sample was geocoded against the city and state GIS centerline. The sample of 10,000 addresses from the rural ALI database was geocoded against the VECC, UPD, and Department of Public Safety Salt Lake Communications Center secondary PSAP source GIS data. With the Salt Lake City Police and Fire Department PSAPs combining into a single center the decision was made to utilize the state GIS centerline from AGRC. The Salt Lake City Police Department currently uses GIS data from the city. GeoComm completed ALI to centerline synchronization testing for Salt Lake City Police Department using the current and future centerline files.

The geocoding processes used a precision geocoding process that did not utilize address locators. Address locators act as an adjustment table that allows addresses that do not match exactly to provide an approved location. Many dispatch mapping applications use abbreviation tables or locators to assist in the location of civic address call locations. Since the analysis process is checking for the functionality of data within an NG9-1-1 system, GeoComm uses precision geocoding to provide a clearer picture of issues that may results in the future. The analysis results may or may not reflect actual location percentages occurring in the PSAP mapping application as software can be configured to provide a higher location or hit rate that may or may not be available within the NG9-1-1 functions set up for Utah.

The following graphs list the PSAPs with the total location or hit rate percentages of the ALI geocode to the centerline map data. The optimum number is 100 percent.




The Salt Lake City Police Department success rate is using the city GIS road centerline. Salt Lake City Police Department will be using the state AGRC data in their new CAD system. The geocoding process was completed on both the city and state centerline with the same sample ALI database. Salt Lake City uses AV abbreviation in their MSAG. The city and state map data use AVE. As previous stated, this variation may not be an issue in the CAD mapping application or other geocoding analysis processes but is noted as an error within this study. The table below reflects the geocoding hit rate for Salt Lake City Police Department using each centerline data source. The results were within one-half a percent of each other.



The geocoding process used by GeoComm provides a breakdown of geocoding errors by category. The categories aid in better understanding of what issues could exist within either the ALI database or the GIS data. A list of the categories and possible reason for a failed geocode is as follows:

| ALI to GIS Centerline Fallout Category | Category Description |
|---|---|
| Address falls in a gap in the compatible ranges | Street name was found but house number fell within a gap in the segment ranges. |
| Address found multiple times | There were more than one location for the house number and street name according to the map data. Issues may lay overlapping address ranges or the refinement boundaries. |
| Address found multiple times on same road feature | The ranges on the specific street segment do not follow standards. Ranges may reflect evens and odds values on the same side of the road. |
| Address found only in a different Community | Using a community boundary or centerline attributes for geocode refinement. Issues may relate to streets not being broken or coincident with community boundaries. |
| Address is higher than compatible ranges | House number in the ALI record was higher than the address ranges for that street name. |
| Address is lower than compatible ranges | House number in the ALI record was lower than the address ranges for that street name. |
| No matching street name found | Street name in the ALI record was not found in the street segments. In the Utah data it may be from the ALI having AV and the map data has AVE. Another issue may be streets with alias names with the ALI having a named street but the map data has the numbered street |

The following table provides a breakdown of the ALI geocode analysis results by category and PSAP. The numbers in the table reflect the volume of fallout records.

| ALI Geocode to Centerline Fallout by Category and PSAP | | | | | |
|---|---|---|---|---|---|
| **Results** | **Salt Lake City PD** | **VECC** | **UPD*** | **DPS** | **University of Utah*** |
| Fail: Address falls in a gap in the compatible ranges | 6 | 245 | 313 | 299 | 0 |
| Fail: Address found multiple times | 0 | 3 | 50 | 33 | 0 |
| Fail: Address found multiple times on same road feature | 1 | 4 | 7 | 4 | 0 |
| Fail: Address found only in a different community | 0 | 516 | 967 | 848 | 0 |
| Fail: Address is higher than compatible ranges | 16 | 100 | 112 | 118 | 1 |
| Fail: Address is lower than compatible ranges | 5 | 92 | 124 | 99 | 0 |
| Fail: No matching street name found | 4,155 | 1,343 | 725 | 1,254 | 17 |
| **Total** | **4,183** | **2,303** | **2,298** | **2,655** | **18** |

*68 total unique addresses in the ALI database for the University of Utah; 10,000 ALI database sample for four remaining PSAPs.

Notes:

- No matching street name is primarily caused from the map data having AVE as a street suffix and the ALI having AV. Software configuration in a dispatch mapping application may plot this location but NG9-1-1 requires an exact match.
- Falling within the gap of ranges generally means that the odd and even ranges in the centerline do not include the house number in the associated address
- An address locating in the wrong community may relate to the GIS boundary data not matching the community in the MSAG or streets not being broken at the boundaries. This type of issue only affects a small number of locations in a PSAP mapping application but a larger affect using the GIS data in NG9-1-1.

# Next Generation Standards

The use of GIS data moving forward into a NG9-1-1 system takes on an expanded role from the call location in the PSAP today. GIS data will be used in the LVF such as civic address or coordinates prior to a device contacting 9-1-1. GIS will also be used in the routing of the 9-1-1 call into the correct PSAP (ECRF). Essentially the GIS data will be taking the place of the MSAG data that is being used today. Accurate and complete GIS data is a requirement based on the elevated use of GIS in a Next Generation system. NENA standards outlined in *Synchronizing GIS with MSAG & ALI* found on the NENA website as document 71-501, approved September 8, 2009, to prepare data for use within a NG9-1-1 system.

## GIS Data Layers

The GIS data model for NG9-1-1 is still in the NENA workgroup stage and has not gone through the final approval process by NENA. What is known is that there will be two types of GIS data layers provisioned into the spatial router for the LVF/ECRF processes. Not all layers being used in the PSAPs today will be provisioned to the spatial router. The two types of required information are location and service boundary data.

### Location Data

The location data layer(s) will be used to validate location information such as a civic address. If the location cannot be validated or located in the GIS location data then components of the record will be invalid.

- Address points - recommended
- Centerline as a backup or main location layer if address points not available
- Building footprints are also an option

### Service Boundaries

Service boundaries are used for validation and routing processes. The minimal boundary layers are listed below however; additional boundaries layers may be needed based on the call transfer protocol in the PSAPs. As example, in the Next Generation system, a PSAP may transfer a call to poison control; therefore a poison control service layer would be needed.

- PSAP
- Fire
- Law
- Medical
- Political

## Attribute Fields

The NENA's GIS data model is still in development and therefore is not available to the public. However, attribute recommendations have been discussed at various conferences. The NENA documentation is meant to provide a guideline and the minimum requirements. The final requirements may be based on desired workflow and specifications of the spatial router.

### Address Points

A Next Generation system will have the ability to determine locations such as suite, apartment, floor, etc. In order to utilize this functionality the map data would need to include the additional location information. As an example, the system would not be able to determine the location of Apt 201 if an address point was not developed to include that information. Therefore, the development process of an address point layer needs address the desired development process for multi-unit structures.

| Type | Possible Development Description |
|---|---|
| Address | House number and street name data (recommend parsed out) |
| Postal Community | Postal community can be determined at the point level. Difficult to develop with accuracy as a polygon. |
| Postal Code | Associated with postal community |
| Building | Such as the building name on a campus |
| Floor | Associated floor within the building |
| Unit | Apartment, suite, or unit number |
| Location | Additional location information |
| Landmark | Vanity address or known landmark name |
| Type | Residential, commercial, etc. |

Note: Fields listed above have been discussed at NENA conferences. Final GIS Data Model has not been approved. Fields may be required or optional.

### Centerline Field

If address validation and routing will be using the centerline as the location data or a backup to an address point file, additional fields that are used in the validation process will be required in the Next Generation centerline. In the call location typically the centerline utilized the ESN as the refining search to find the location of the correct address such as 102 Main St. In Next Generation there will no ESN for refinement, therefore the address information will need to be embedded in the centerline attributes.

Some field descriptions listed below could be required or optional.

| Type | Possible Development Description |
|---|---|
| Municipality Left/Right | Municipality on the left or right side of the from NODE |
| Postal Community Left/Right | Postal community spelled out on the left or right side of the from NODE |
| Postal Code Left/Right | Postal code on the left or right side of the from NODE |
| MSAG Community Left/Right | MSAG community on the left or right side of the from NODE |

Note: Fields listed above have been discussed at NENA conferences. Final GIS Data Model has not been approved. Fields may be required or optional.

**Service Boundary**

The service boundaries are similar to the ESN boundaries that are used in most systems today. Current system only allows for fire, law, and medical while a Next Generation system can accommodate beyond these there services. It could be extended to coast guard, forest patrol, poison control, etc. The types of service boundaries will vary in different areas. The service boundaries will be used for routing purposes in an Internet Protocol (IP) world so additional fields containing routing information will be necessary.

| Type | Possible Development Description |
|---|---|
| Effective Date | Date the new service boundary goes into effect. This is important based on annexations, service agreements, etc. |
| ID of Agency | Unique name for service |
| Response of Service | Type of service represented in boundary |
| Routing | URN/URL for routing |
| Agency Contact Information | URI for the contact information location |
| Service Display Name | Service Name such as Mansfield PD |

Note: Fields listed above have been discussed at NENA conferences. Final GIS Data Model has not been approved. Fields may be required or optional.

# Attachment 1: Data Report Cards

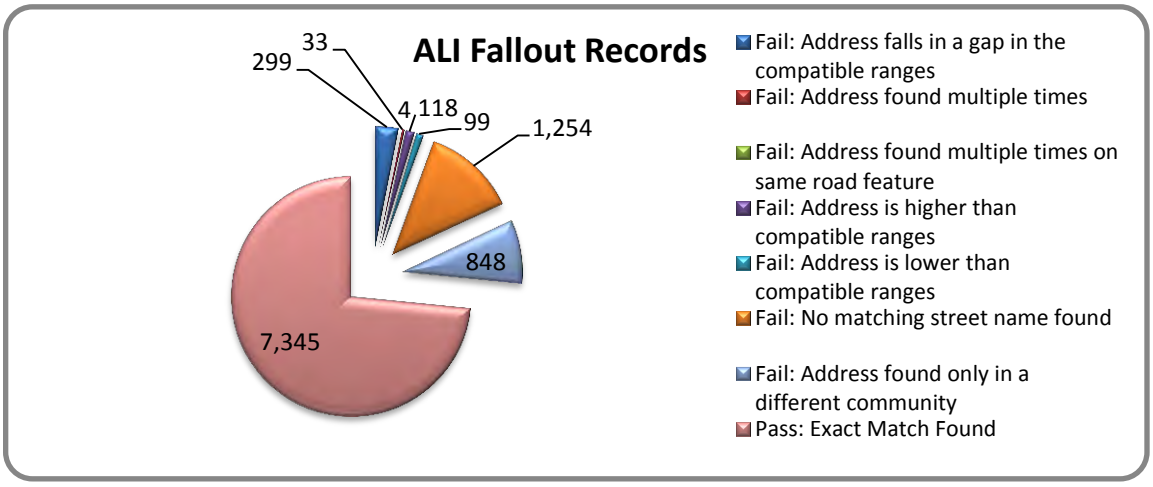
## Department of Public Safety Salt Lake Communications Center

| Review | Synchronization Accuracy | | |
|---|---|---|---|
| Road Centerline Review | 3700 | ALI Records Tested* | 10,000 |
| ALI to Centerline Synchronization | 73.45% | Road Segments | 52,280 |

*Sample unique addresses

| Review | Overlapping address ranges | Segments not broken at intersections or service boundary* |
|---|---|---|
| **Road_Centerline Review** | 1,589 | 2,111 |

| ALI to Centerline Geocode Category | ALI Fallout Records |
|---|---|
| Fail: Address could not be found in compatible ranges | 0 |
| Fail: Address falls in a gap in the compatible ranges | 299 |
| Fail: Address found multiple times | 33 |
| Fail: Address found multiple times on same road feature | 4 |
| Fail: Address is higher than compatible ranges | 118 |
| Fail: Address is lower than compatible ranges | 99 |
| Fail: No matching street name found | 1,254 |
| Fail: Address found only in a different community | 848 |
| Pass: Exact Match Found | 7,345 |



## Salt Lake City Police Department PSAP

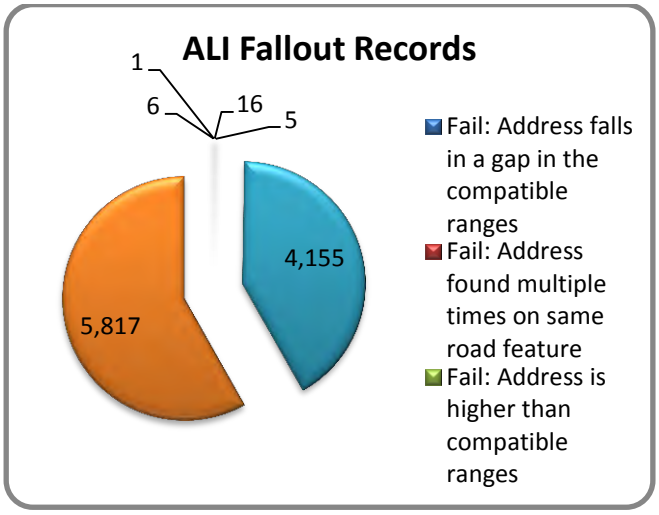
| Review | Synchronization Accuracy | | |
|---|---|---|---|
| Road Centerline Review | 31 | ALI Records Tested* | 10,000 |
| ALI to Centerline Synchronization | 58.17% | Map Data | 10,653 |

*Unique ALI addresses

| Review | Overlapping address ranges | Segments not broken at intersections or service boundary* | |
|---|---|---|---|
| **Road_Centerline Review** | 23 | 8 | |

*See Centerline Range Overlap and Spatial Review tabs below*

| ALI to Centerline Geocode Category | ALI Fallout Records | |
|---|---|---|
| Fail: Address could not be found in compatible ranges | 0 | |
| Fail: Address falls in a gap in the compatible ranges | 6 | |
| Fail: Address found multiple times | 0 | |
| Fail: Address found multiple times on same road feature | 1 | |
| Fail: Address is higher than compatible ranges | 16 | |
| Fail: Address is lower than compatible ranges | 5 | |
| Fail: No matching street name found* | 4,155 | |
| Pass: Exact match found | 5,817 | |



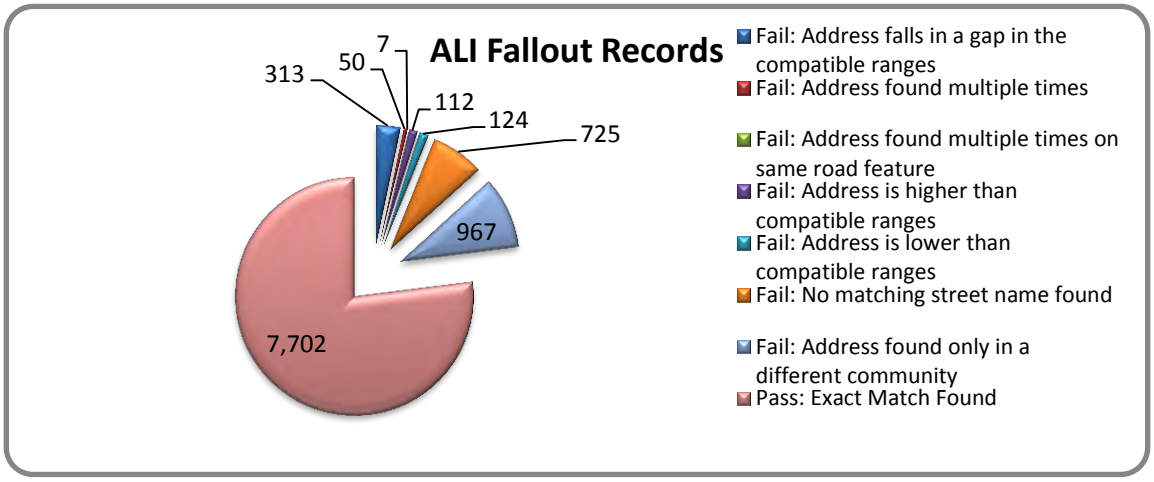
## Unified Police Department (UPD) of Greater Salt Lake PSAP

| Review | Synchronization Accuracy | | |
|---|---|---|---|
| Road Centerline Review | 2972 | ALI Records Tested* | 10,000 |
| ALI to Centerline Synchronization | 77.02% | Road Segments | 42,017 |

*Sample unique addresses

| Review | Overlapping address ranges | Segments not broken at intersections or service boundary* |
|---|---|---|
| **Road_Centerline Review** | 1,205 | 1,767 |

| ALI to Centerline Geocode Category | ALI Fallout Records |
|---|---|
| Fail: Address could not be found in compatible ranges | 0 |
| Fail: Address falls in a gap in the compatible ranges | 313 |
| Fail: Address found multiple times | 50 |
| Fail: Address found multiple times on same road feature | 7 |
| Fail: Address is higher than compatible ranges | 112 |
| Fail: Address is lower than compatible ranges | 124 |
| Fail: No matching street name found | 725 |
| Fail: Address found only in a different community | 967 |
| Pass: Exact Match Found | 7,702 |



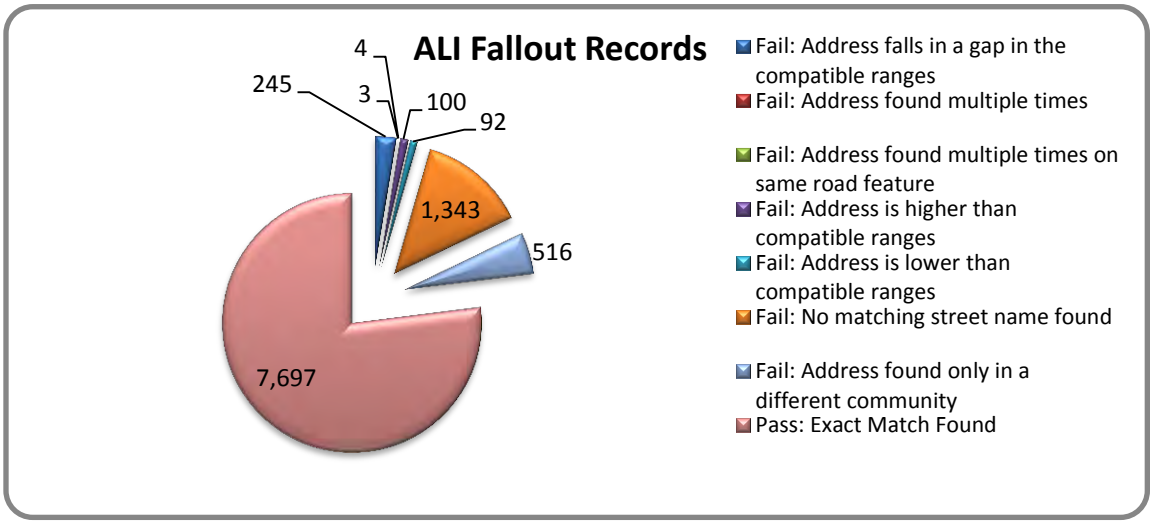
## Salt Lake Valley Emergency Communications Center (VECC)

| Review | Synchronization Accuracy | | |
|---|---|---|---|
| Road Centerline Review | 1,753 | ALI Records Tested* | 10,000 |
| ALI to Centerline Synchronization | 76.97% | Road Segments | 53,376 |

*Sample unique addresses

| Review | Overlapping address ranges | Segments not broken at intersections or service boundary* |
|---|---|---|
| **Road_Centerline Review** | 521 | 1,232 |

| ALI to Centerline Geocode Category | ALI Fallout Records |
|---|---|
| Fail: Address could not be found in compatible ranges | 0 |
| Fail: Address falls in a gap in the compatible ranges | 245 |
| Fail: Address found multiple times | 3 |
| Fail: Address found multiple times on same road feature | 4 |
| Fail: Address is higher than compatible ranges | 100 |
| Fail: Address is lower than compatible ranges | 92 |
| Fail: No matching street name found | 1343 |
| Fail: Address found only in a different community | 516 |
| Pass: Exact match found | 7,697 |



Note: The University of Utah Department of Public Safety PSAP does not have a data report card since the PSAP uses a building footprint for their GIS information, and therefore the centerline synchronization will not pertain to their data.

Appendix
E

# Operating Budgets for VECC and UPD

**Operating Budgets for Salt Lake Valley Emergency Communications Center (VECC) and Unified Police Department (UPD)**

| **Personnel Expense** | **VECC** | **UPD** | **Combined** |
|---|---|---|---|
| Full-time Wages and Benefits | $ 7,012,487 | $ 1,848,395 | $ 8,860,882 |
| Part-time/Per Diem Wages | $ 90,384 | $ 55,000 | $ 145,384 |
| Overtime | $ 477,544 | $ 22,845 | $ 500,389 |
| **Operating Expense** | **VECC** | **UPD** | **Combined** |
| Supplies | $ 7,255 | $ 7,195 | $ 14,450 |
| Training and Travel | $ 26,853 | $ 15,910 | $ 42,763 |
| Rent and Utilities (electricity, water, sewer, gas) | $ 114,759 | $ 26,000 | $ 140,759 |
| Miscellaneous (basic office equipment, general building repairs, cleaning service, car allowance, insurance, professional memberships, headsets, chairs, technical support, etc.) | $ 1,876,287 | $ 20,000 | $ 1,896,287 |
| 9-1-1 Network and Database | $ 892,191 | $ - | $ 892,191 |
| **Maintenance** | | | |
| Radio | $ 7,000 | $ 84,000 | $ 91,000 |
| CAD | $ 142,469 | $ 352,517 | $ 494,986 |
| 9-1-1 CPE | $ 149,054 | | $ 149,054 |
| Administrative Telephone | $ 12,082 | | $ 12,082 |
| Legal/Accounting Services | $ 72,375 | | $ 72,375 |
| Lease Obligations | $ 87,244 | | $ 87,244 |
| Debt Service | $ 773,496 | | $ 773,496 |
| **Total** | **$ 11,741,480** | **$ 2,431,862** | **$ 14,173,342** |